Rapid Rail® Co-Collector

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A DOVER COMPANY

PARTS AND SERVICE MANUAL

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TP1RRC-10001-1111

Environmental Solutions Group
A DOVER COMPANY

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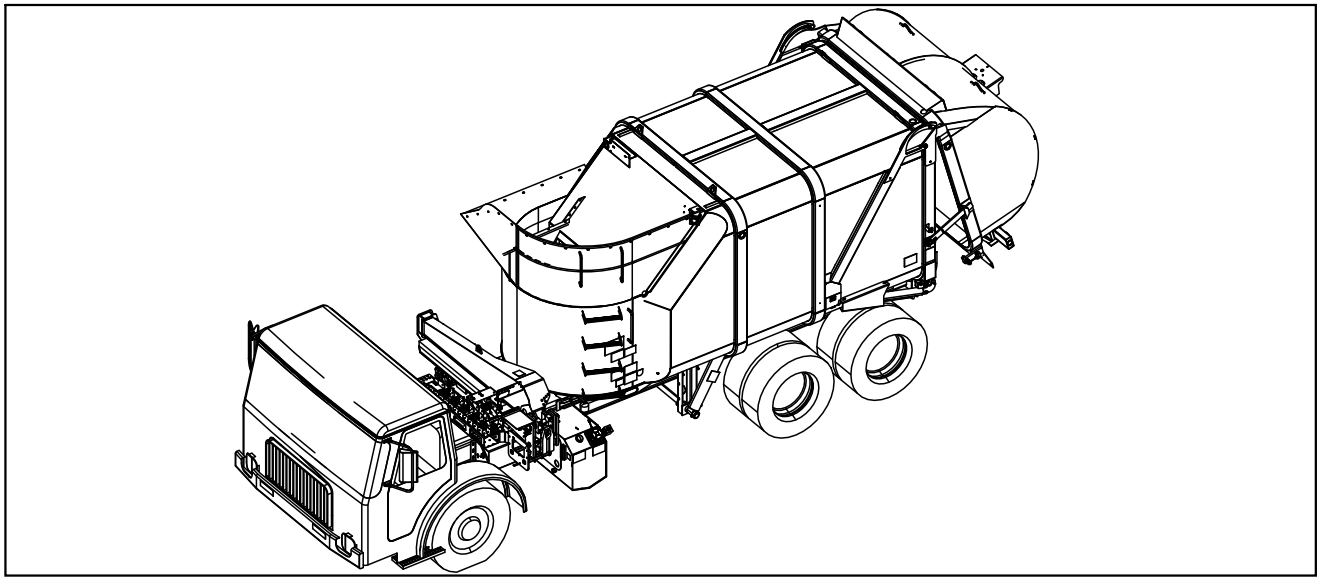
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1. UNDERSTANDING THE PARTS MANUAL

The Parts Manual is the first Manual of the Parts and Service Manual. (Not all illustrations in this section are from this Parts Manual. We have used illustrations from other Parts Manuals in order to have a common Section 1 for all Parts Manuals and to be consistent in our explanation across all Parts Manuals.

A. Parts Manual Sections

(1) The Parts Manual includes illustrations and parts listings of serviceable assemblies and attaching parts.

(2) The Parts Manual is made up of seven sections, not including Section 1, for easy access and use. Sections 2 - 7 contain the parts lists and technical illustrations for the unit divided into logical sections. Section 8 is a numerical index for the parts manual.

(3) Each section can be divided into logical sub-sections. Each logical sub-section has a page number and starts the sub-section. See Figure 1001. as the divider section is shown in the Table of Contents for Section 2, Body and Attaching Parts.

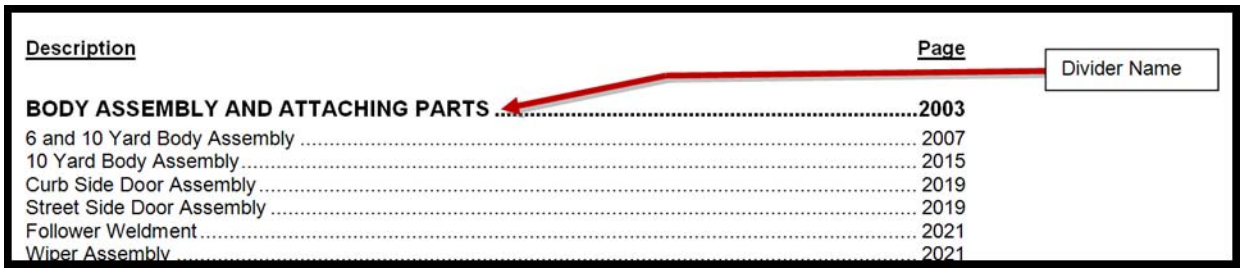


Figure 1001. Divider shown in a TOC

B. Parts Lists and Illustrations

(1) The Parts Lists and Illustrations (when available) show serviceable assemblies and sub-assemblies broken down to weldments, wear parts and attaching parts.

(2) Weldments that have no attaching parts or wear parts are not illustrated or shown in a Parts List., unless the weldment has a sub-assembly with wear parts or attaching parts.

(3) Schematics are not included in the Parts Lists unless parts are identified in a schematic with a Parts List.

(4) The Schematics are referenced to Service Manual Section 10 and included in Service Manual Section 10.

2. USING THE PARTS MANUAL

A. Parts Manual

See Figure 1002.

(1) The Parts Manual is divided into logical sections to help locate an assembly in the unit:

- Section 2 is the Body and Attaching Parts
- Section 3 is Controls
- Section 4 is Hydraulic (and Pneumatic as applicable) Circuits
- Section 5 is Hydraulic (and Pneumatic as applicable) Components
- Section 6 is Electrical
- Section 7 is Options.

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(2) Each section is assigned a page block for the page numbers.

(a) The page block for each section is a 1000-page block of numbers. For example, Section 2 is the 2000 page block; Section 3 is the 3000 page block and so on.

(b) The 1000-page block allows us to have sections that are more than 99 pages more easily and to more accurately create the Tables of Content (TOCs). In the past, we used "." pages after page 98, such as Page 99.1, which required us to manually create the TOC for that section.

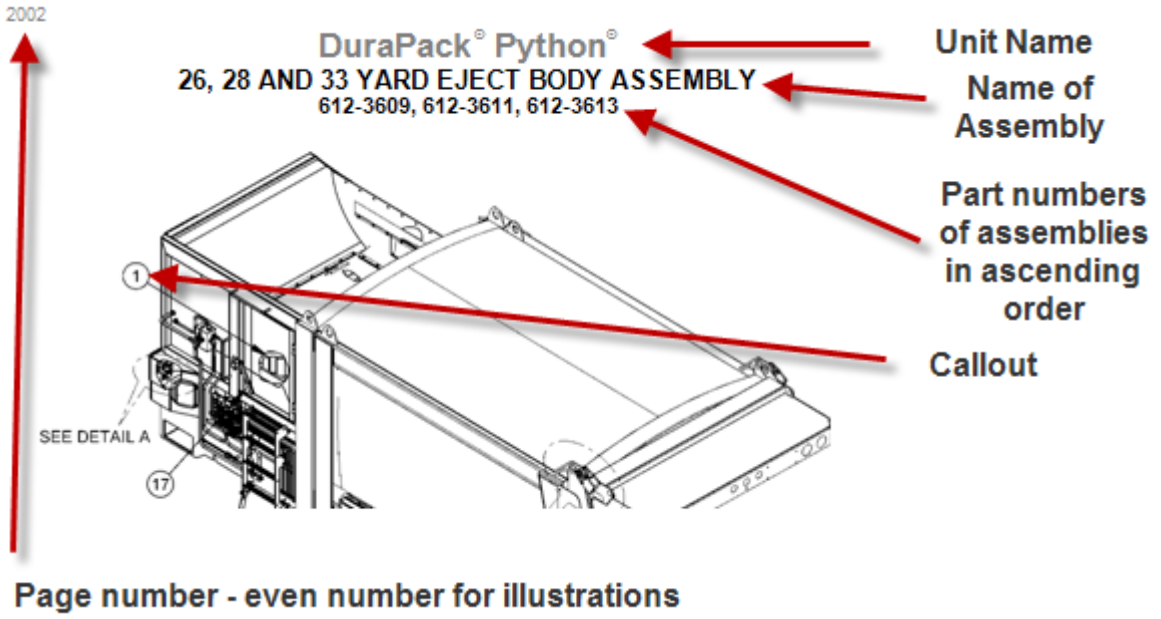


Figure 1002. Titles and Part Numbers

(3) The top of each page identifies the name of the assembly or multiple similar assemblies followed underneath with the part number for each assembly.

(4) Each assembly given in a section of the manual may have an illustration and will always have a Parts List.

(5) The left page (even-numbered page) is an illustration (when available) with callouts and the right page shows the matching Parts List.

(6) An illustration and Parts List may show two or more similar assemblies. The Parts List will identify the parts differences between the similar assemblies.

B. Illustration Page

See Figure 1002.

(1) Each illustration page consists of a drawing with numbered callouts showing all the parts of the assembly listed in the Parts List.

(2) Each callout on the page is a number, which is the same as the item number in the ITEM column in the Parts List.

(3) As we continue to upgrade the manuals, the illustrations will not show welded parts, unless the part is an assembly with a sub-assembly with wear parts or loose attaching parts.

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C. Parts List Page

See Figure 1003.

(1) The parts list is organized into five columns:

- ITEM – This number corresponds to the callout on the illustration
- PART NO. – The Heil part number associated with the referenced part on the illustration
- DESCRIPTION – Description of the associated part
- EFF – This is a letter code to identify each top assembly
- QTY – This is the number of parts needed in the top assembly.

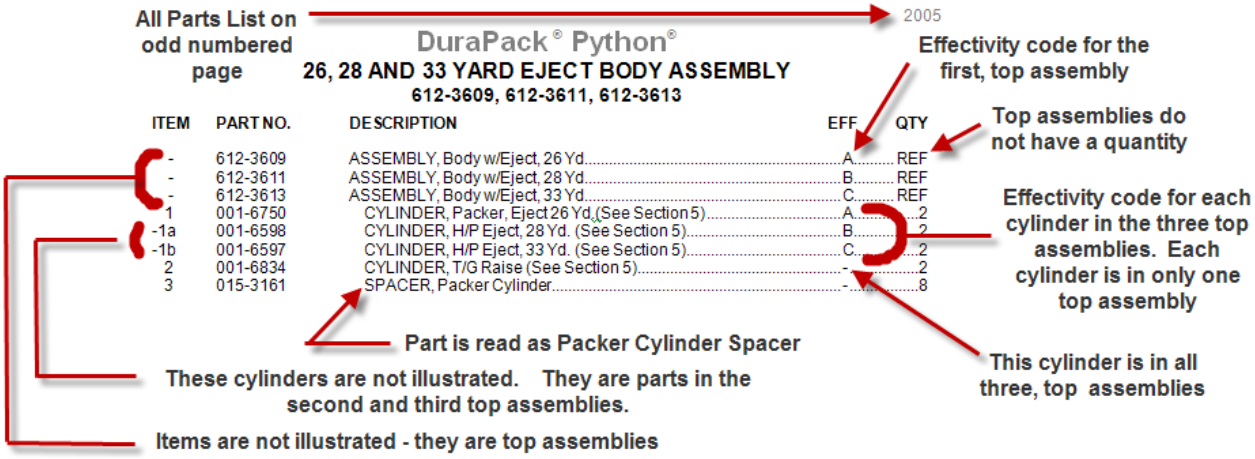


Figure 1003. Parts List

(2) A hyphen (-) preceding an item number shows that the item is not illustrated.

(3) The item number in the ITEM column for each part number has the same number as a call out on its matching illustration.

(a) When there are two assemblies identified at the top of the page, and each assembly uses a different (usually similar) part at the same location, the following item numbers are given an alpha variant designation after the item number.

(b) For example, when the assemblies at the top of a Parts List are 612-1111 and 612-1122, and 612-1111 uses a bolt (part number FS070714) at a location, it is given the designation as Item 12. When the 612-1122 assembly uses a bolt (part number FS070712) at the same location, it is given the designation as Item 12a.

(4) Part numbers are typically in the following format, where “n” is a number: nnn-nnnn. Some part numbers may look like nnn-nnnn-nnn. Use these numbers when you order parts.

(5) The descriptions are given in the following format: NOUN, MODIFIER, MODIFIER. For example, ASSEMBLY, Body, 16 yd.

(6) An effectivity code (“A” thru “Z” (does not include “I” or “O”)) or “–“ is given in the EFF column for each top assembly (and its parts) listed at the top of the page.

(a) For example, when there is only one assembly part number at the top of the page, the effectivity code is “-“ in the EFF column.

(b) For example, if the assembly part numbers at the top of the page are 612-1111 and 612-1122, the effectivity code “A” is shown in the EFF column for 612-1111 and the effectivity code “B” is shown in the EFF column for 612-1122.

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(7) An effectivity code, as defined above, is also given to each sub-assembly and part for each top assembly given at the top of the page.

(a) A "-" is in the EFF column for each assembly or part that is the same between two or more top assemblies.

(b) Each sub-assembly or part that is different for one or more of the part numbers at the top of the page is assigned the same effectivity code as the top assembly that the part or sub-assembly is in.

(c) For example, when the assembly part numbers at the top of the page are 612-1111 and 612-1122 and each top assembly uses the same bolt at Item 11 (FS070715), then the effectivity code for that bolt is "-".

When 612-1111 uses a bolt (part number FS070714) at Item 12 and 612-1122 uses a bolt (part number FS070712) at Item 12a, Item 12 is given an effectivity code of A and Item 12a is given an effectivity code of B.

(8) The following entries can appear in a parts list:

- A/R - AS REQUIRED (in the QTY column)
- NSS - NOT SERVICED SEPARATELY (in the PART NO. column). This means the part is not available for ordering individually. It is probably a part in another part number for ordering purposes, such as in a seal kit
- REF – REFERENCE (in the QTY column).

(9) When REF is in the QTY column, it indicates:

- The part is an assembly shown at the top of the page
- The part is in another assembly and listed and/or shown for reference purposes.

(10) The DESCRIPTION column may contain references to other pages in the current section of the Parts Manual; another section in the Parts Manual; a section in the Service Manual. (See Figure 1004.).

(a) See "Pg. xxxx" in the DESCRIPTION column indicates the page number where the Parts List is located for this assembly or part in this section of the Parts Manual.

(b) See "SM XX" in the DESCRIPTION column indicates the Section in the Service Manual where you find more information, which in this case is the schematic and is in Service Manual Section 10 – Schematics.

(c) See "Section X" in the DESCRIPTION column indicates is the Section in the Parts Manual where this assembly or part is shown with an illustration (when available) and a Parts List.

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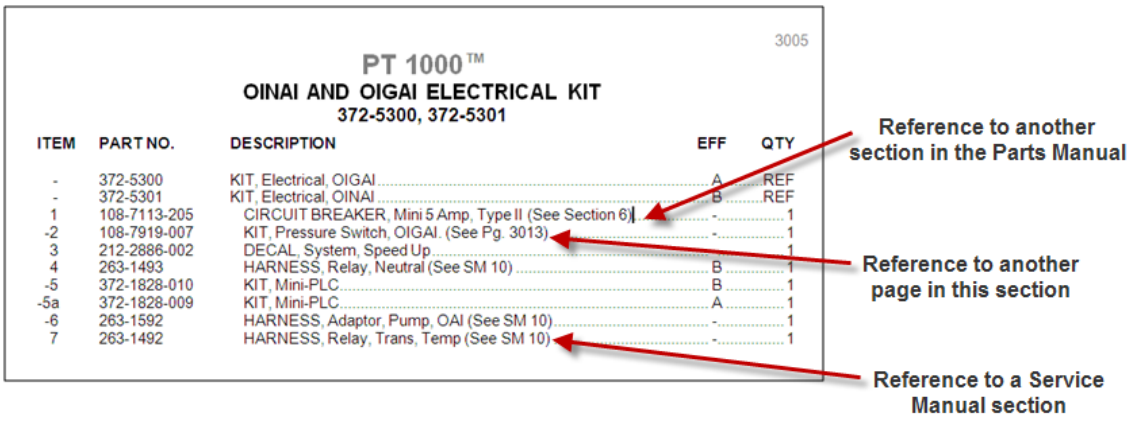


Figure 1004. Reference in DESCRIPTION

3. NUMERICAL INDEX

The Numeric Index consists of all parts with their respective page number.

Use the Numeric Index to help find part numbers in the Parts Manual.

4. HOW TO USE THE NUMERICAL INDEX

See Figure 1005. and Figure 1006.

A. Finding a Part Number in the Manual

You use the Numerical Index to find the Parts List page or pages that a part number is on. When you find the Part Number in the Numerical Index, the Numerical Index shows you what page or pages where the Part Number is listed in the Parts Manual.

B. Part Numbers in the Numerical Index

The parts are listed in ascending order, that is, the lowest numbered part starts the Numerical Index and the last part number is the highest alpha character.

(1) If part number 001-4105 (a cylinder) is the lowest part number in a manual, then it is the first part number given in the Numerical Index with the page or pages you can find the part number in one or more Parts List.

(2) If a part number is TAS-F158-050 and it is the highest alpha-based part number, then this part number would be the last part number in the Numerical Index with the page or pages you can find the part number in one or more Parts Lists.

(3) Once you have a Parts List page number for a part number, then you find the part number and its Item Number in the Parts List and can see the part in the related illustration, if available.

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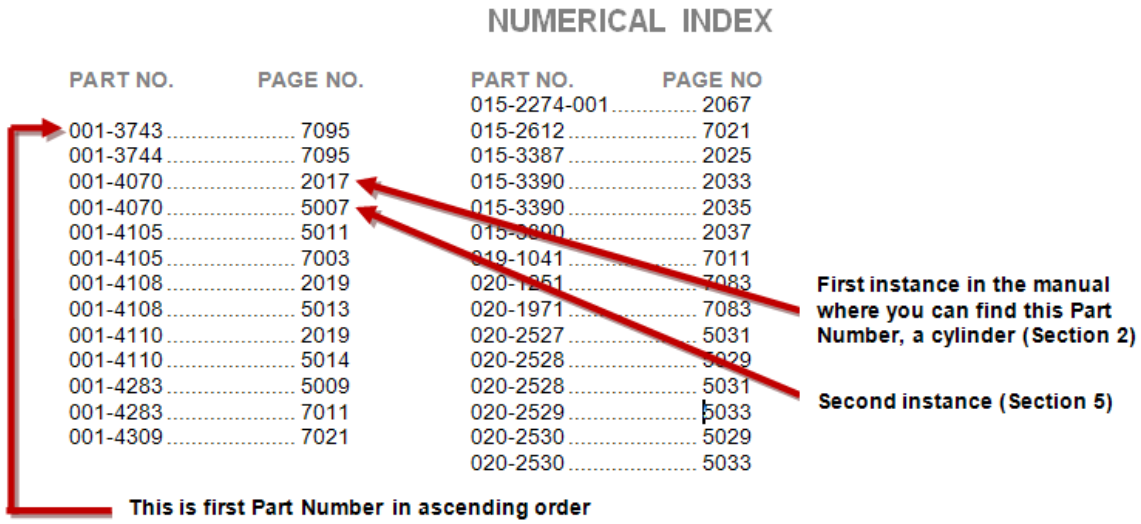


Figure 1005. Numerical Index – First Part Number

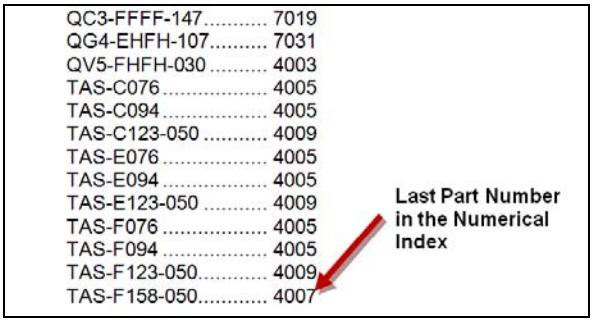


Figure 1006. Numerical Index – Last Part Number

5. HEIL CUSTOMER SUPPORT

For inquiries about units, call Customer Care at 866-ASK-HEIL (866-275-4345).
For inquiries about parts, call Parts Central at 800-528-5308.
For Technical Service, call 866-310-4345.

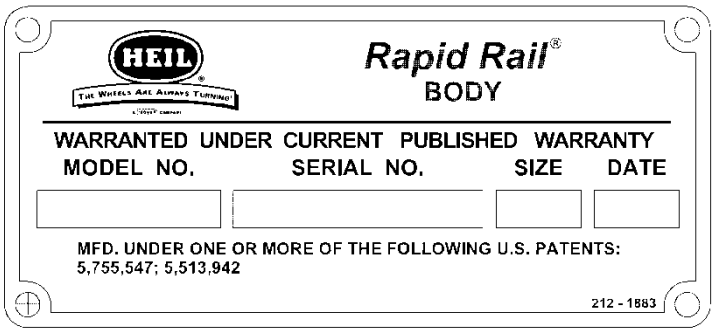
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6. SERIAL PLATE

A. Serial Plate Location and Information

(1) The serial plate is the “birth certificate” of the unit. It is located on the front, left side of the unit.



(2) Information stamped in the four boxes on the serial plate shows:

- Model number: 612-nnnn (“n” is any single-digit number)
- Unit’s unique serial number
- Body size (cu. yd.)
- Date of manufacture (last number of the year followed by the number of the day of the year, e.g. 6145 is year 2006 and the 145th day of 2006).

B. Year of Manufacture Information

The code for the year of manufacture is in accordance with FMVSS 115. See the following table.

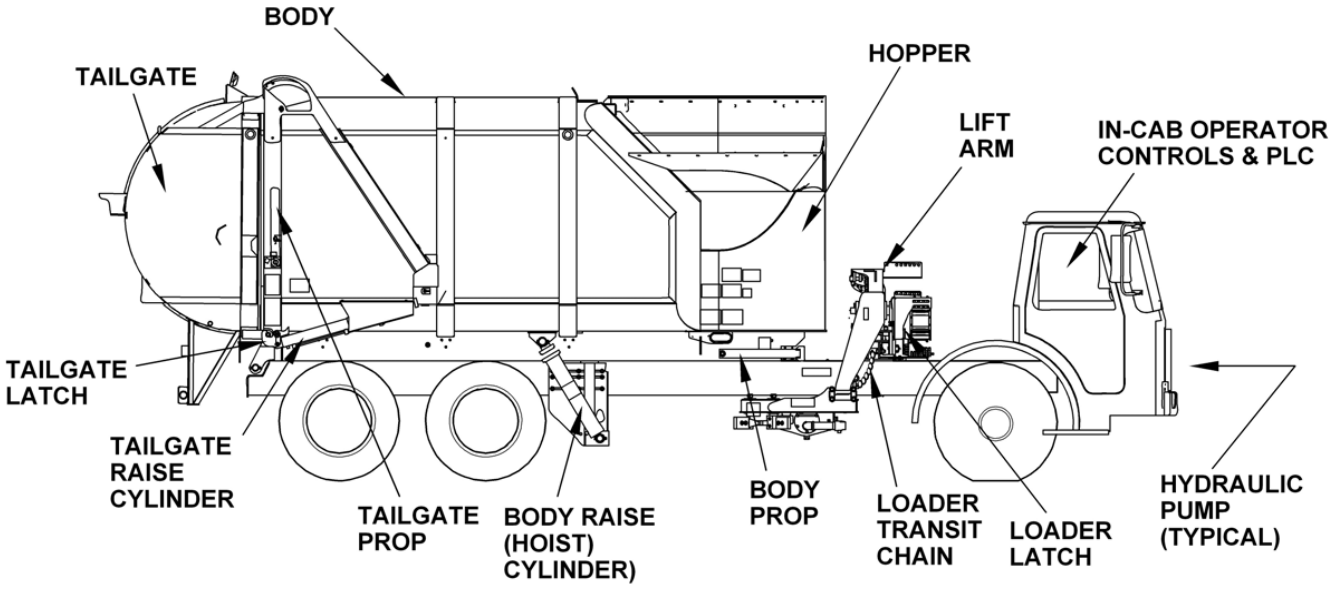
Year of Manufacture			
Year Code	**Year**	**Year Code**	**Year**
S	1995	5	2005
T	1996	6	2006
V	1997	7	2007
W	1998	8	2008
X	1999	9	2009
Y	2000	A	2010
1	2001	B	2011
2	2002	C	2012
3	2003	D	2013
4	2004	E	2014

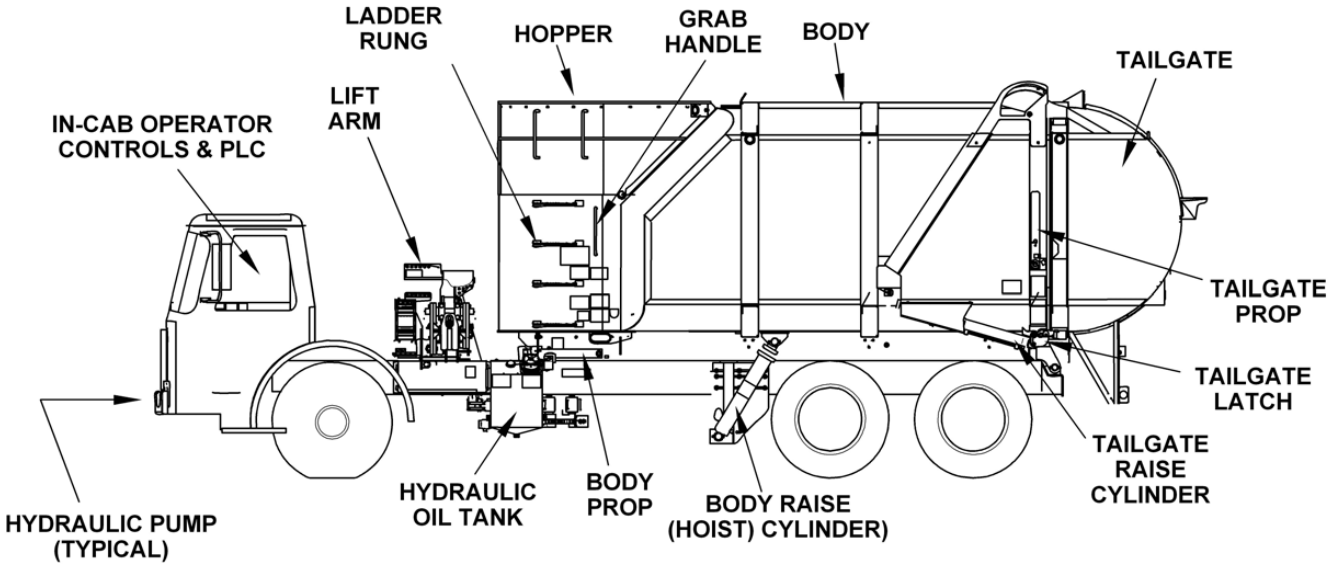
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7. NOMENCLATURE

The following picture shows the major components and their typical location on the unit.





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8. RECOMMENDED SPARE PARTS

The following table gives a list of recommended spare parts for your unit. Heil recommends keeping the following parts on hand.

Part No.	Description	Qty
Body Assembly		
003-4438	BEARING, Spherical, Packer Lower	1
003-4576-004	RACES, Inner	2
005-4130	LINK, Single	1
005-4131	LINK, Double	1
005-4132	ASSEMBLY, Link	1
048-6231	PIN, 2” Dia,.	2
048-6238	PIN, Packer, 1” Dia.	1
067-0630	GAUGE, Sight, Thermometer	1
075-0759	ASSEMBLY, Filter	4
272-8233	KIT, Seal, Packer	1
L6-P3	CAP, Filler	1
Loader Assembly		2
019-1265	SPRING, Torsion (Spring Grabber Assembly)	1
019-1390	SPRING, Grabber (90/300 Universal)	1
019-1392	SPRING, Belt Grabbers	1
019-1404	SPRING, Extension, Huggger Grabber	1
031-5724-012	SOLENOID, Air	1
062-0712	ROLLER, Grabber, 4 “	1
071-0838	BELT, Grip, Universal (90/300 Universal)	1
071-0843	BELT, Arm, 47”	1
080-1905	CUSHION, Bumper	
080-1906	CUSHION, Cylinder	1
Controls		
069-0032	KIT, Micro Relay	1
069-0084-001	RELAY, Low Profile, 12 V	2
108-4433	SWITCH, Stop, Illuminated, Red	1
108-7112-002	FUSE, Mini Blade, Grey, 2 Amp	1
108-7112-004	FUSE, Mini Blade, Pink, 4 Amp	1
108-7112-005	FUSE, Mini Blade, Tan, 5 Amp	1
108-7554	SWITCH, Rocker, On-Off	1
108-7760	SWITCH, Rocker (Allied)	1
108-7760-003	SWITCH, Rocker	1
254-4721-002	BUTTON, Control 4, (Autocar)	q

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Part No.	Description	Qty
Cylinders		
001-6404	CYLINDER, Arm Raise	1
001-6405	CYLINDER, Tailgate (Long Body)	1
001-6406	CYLINDER, Packer	1
001-6407	CYLINDER, Dump	1
001-6416	CYLINDER, Grip (Loader w/o Grabbers)	
001-6445	CYLINDER, Body Hoist	1
001-6754	CYLINDER, Tailgate	1
001-6757	CYLINDER, In/Out	1
001-6829	CYLINDER, Grip	1
Filters		
075-0912-030	FILTER, Element 3 micron	4
075-0930-001	FILTER, Element (Pressure)	4
Electrical		
063-0109	SWITCH, Proximity, NO, 30 mm	2
108-4643	RELAY, Throttle	1
108-4643-001	RELAY, Throttle (Remote Neutral)	1
108-4643-001	RELAY, (Navistar)	1
108-6816	SWITCH, Toggle	2
108-7760	SWITCH, Rocker, SPST	1
108-7760-005	SWITCH, Rocker, SPST NC	1
108-7931	FUSE, blade, 40 Amp	1

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9. GLOSSARY

The Glossary is a collection of terms used in this manual and the explanation for each term. The terms are used in the descriptions of parts

°	Degree
#	Number
'	Feet
"	Inch
Amp.	Ampere
AWG	American Wire Gauge
BFI	
CS	Curb Side
DC	Direct Current
Dia.	Diameter
EOS	Electronic Over Speed
FJIC	Female Joint industry Council
FNPT	Female National Pipe Thread
Ga.	Gauge
Gal.	Gallon
Gr.	Grade
Hd.	Head
Hex	Hexagonal
HH	Hexagonal Head
HHCS	Hex Head Cap Screw
HRS	High Resistant Steel
Hyd	Hydraulic
ID	Inside Diameter
I/O	Input/Output
JIC	Joint Industry Council
KPSI	Kilo Pounds Per Square Inch
Lb.	Pound
LDA	
LED	Light Emitting Diode
LCD	Liquid Crystal Display
Mach.	Machined
MJIC	Male Joint Industry Council
MNPT	Male National Pipe Thread
mm.	Millimeter
Mtg.	Mounting
NC	Normally Closed
No.	Number
NPT	National Pipe Thread
OD	Outside Diameter
OIG	Operate in Gear
OIGAI	Operate in Gear at Idle
OIN	Operate in Neutral
Pg.	Page
PLC	Programmable Logical Control
PSI	Pounds per Square Inch
PTO	Power Take Off
QDC	Quick Disconnect Coupling
Rd.	Round
RH	Right Hand
SAE	Society of Automotive Engineers
SCH	
SH	Service Hoist
SS	Street Side
SM	Service Manual
SPST	Single Pole Single Throw
SQ	Square
ST	
S/S	Stainless Steel
Std.	Standard
Str.	Straight
STT	Stop Tail Turn
Thd.	Thread
V	Volts
W	Width
w/	With
w/o	With Out
Yd.	Yard

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SECTION 2
BODY AND ATTACHING PARTS

Rapid Rail® Co-Collector
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Packer Installation Kit 2009
Packer Cylinder Mount Kit 2011
Packer Mounting Kit 2013
Packer Paddle 2015
Packer Seal Kit 2017
Actuator Mounting Plate 2019
Packer Extension Assembly 2021
Split Body Brush Guard Kit 2023
7 Yard Split Tailgate Assembly 2023
Tailgate Prop Kit 2025

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Non-Pressurized Oil Tank Assembly 2035
Oil Tank Assembly 2037

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BODY ASSEMBLY AND ATTACHING PARTS

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30 AND 32 YARD SPLIT BODY ASSEMBLY

550-0107, 550-0108

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	550-0107	ASSEMBLY, Body, Split, 32 Yd.	A	REF
-	550-0108	ASSEMBLY, Body, Split, 30 Yd.	B	REF
-1	372-4990-025	ASSEMBLY, Body, Split, 25 Yd. (See Pg. 2005)	A	1
-1a	372-4990-023	ASSEMBLY, Body, Split, 23 Yd. (See Pg. 2005)	B	1
-2	372-0761	KIT, Trim, Long Body (See Pg. 2155)	-	1
-3	372-4990-007	ASEMBLY, Tailgate, Split, 7 Yd., ANSI (See Pg. 2023)	-	1

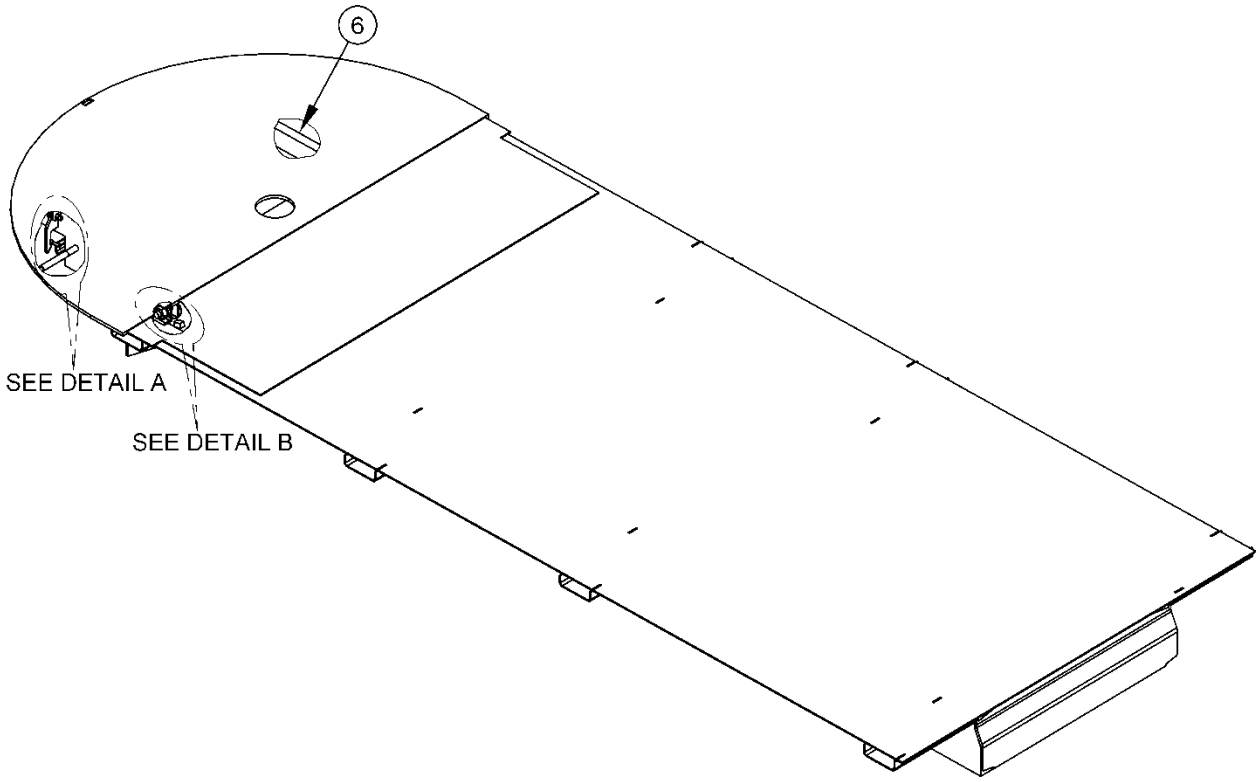
23 AND 25 YARD SPLIT BODY ASSEMBLY

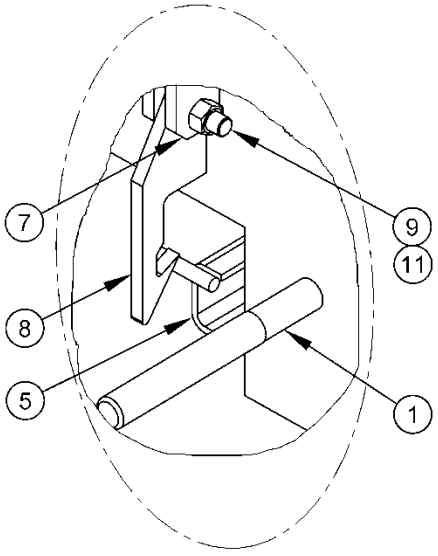
372-4990-023, 372-4990-025

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-4990-023	ASSEMBLY, Body, Split, 23 Yd.	A	REF
-	372-4990-025	ASSEMBLY, Body, Split, 25 Yd.	B	REF
-1	115-0761	LIGHT, Side Mounted (See SM 7)	-	6
-2	115-0782	LIGHT, Turn, Mid-Body (See SM 7)	-	2
-3	177-3158	INSTALLATION, Body Prop (See Pg. 2007)	-	1
-4	237-9118-023	WELDMENT, Body, Split, 23 Yd.	A	1
-4a	237-9118-025	WELDMENT, Body, Split, 25 Yd.	B	1
-5	272-8909	KIT, Body Hydraulic, Split (See Section 4)	-	1
-6	372-0668	INSTALLATION, Shroud, Cylinder, Tailgate (See Pg. 2009)	-	1
-7	372-1654	INSTALLATION, Kit, Packer (See Pg. 2009)	-	1
-8	372-2875	KIT, Body Guard, Brush, Split (See Pg. 2023)	-	1
-9	372-4990-001	KIT, Body Electrical, Split (See Section 6)	-	1

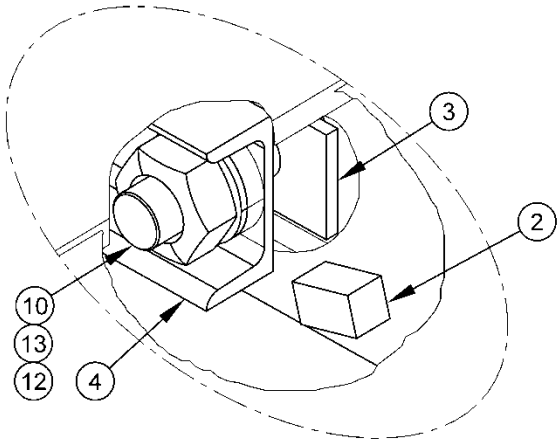
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BODY PROP INSTALLATION
177-3158





DETAIL A



DETAIL B

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BODY PROP INSTALLATION
177-3158

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	177-3158	INSTALLATION, Body Prop	-	REF
1	070-1172	GRIP, Control Handle	-	1
2	080-1629	STOP, Body Prop	-	1
3	134-9919	SLEEVE, Plate for Prop	-	2
4	177-3159	WELDMENT, Body Prop, Street	-	1
5	177-3170	CHANNEL, Stiffener, Body Prop, 40-1/2”	-	1
6	177-3175	WELDMENT, Body Prop, Curb	-	1
7	177-3177	BRACKET, Latch, Body Prop	-	2
8	177-3178	LATCH, Body Prop, 3/8”	-	1
9	FS071130	HHCS, 1/2"-13 x 2”, Gr. 5	-	1
10	FS082040	HHCS, 1”-8 x 3”, Gr. 8	-	2
11	FS231100	NUT, Lock, 1/2”-13, Gr. 5	-	1
12	FS232000	NUT, Lock, 1”-8, Gr. 5	-	2
13	FS522000	WASHER, Flat, 1”, SAE, Plain	-	2

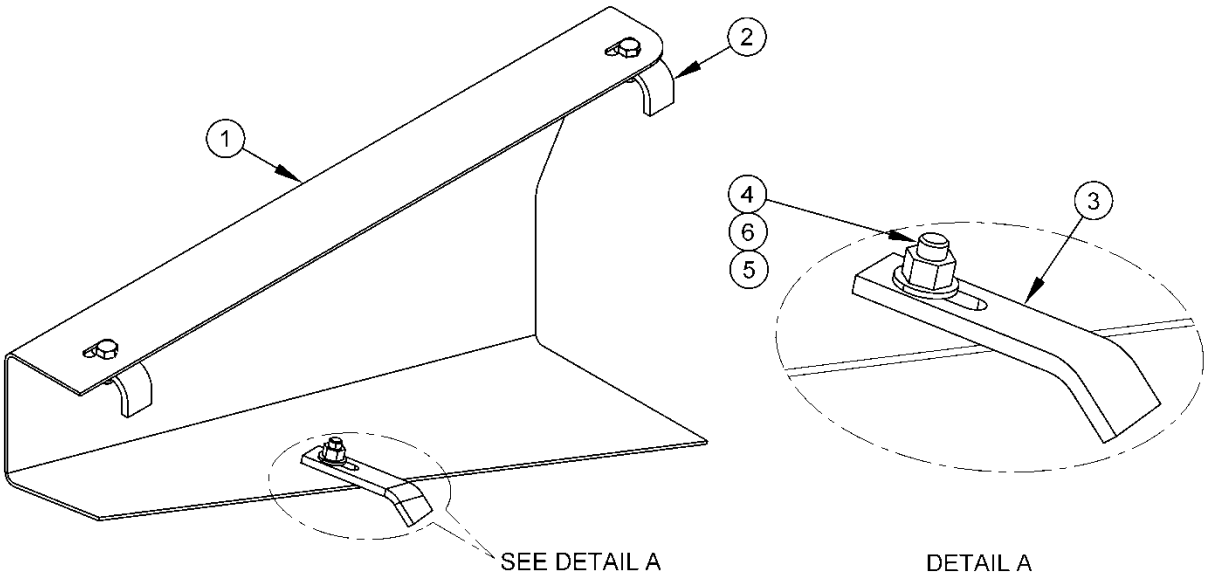
Note: Item 14 is Installation Drawing.

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TAILGATE CYLINDER SHROUD INSTALLATION

372-0668



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TAILGATE CYLINDER SHROUD INSTALLATION

372-0668

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-0668	INSTALLATION, Shroud, Cylinder, Tailgate	-	REF
1	113-2833-001	SHROUD, Cylinder, Tailgate	-	1
2	211-9157	BRACKET, Shroud, Cylinder	-	2
3	211-9157-001	BRACKET, Angled, Shroud, Tailgate	-	2
4	FS070920	HHCS, 3/8”-16 x 1”, Gr. 5	-	3
5	FS230900	NUT, Lock, 3/8”-16, Gr. 5	-	3
6	FS520900	WASHER, Flat, 3/8” SAE, Plain	-	3

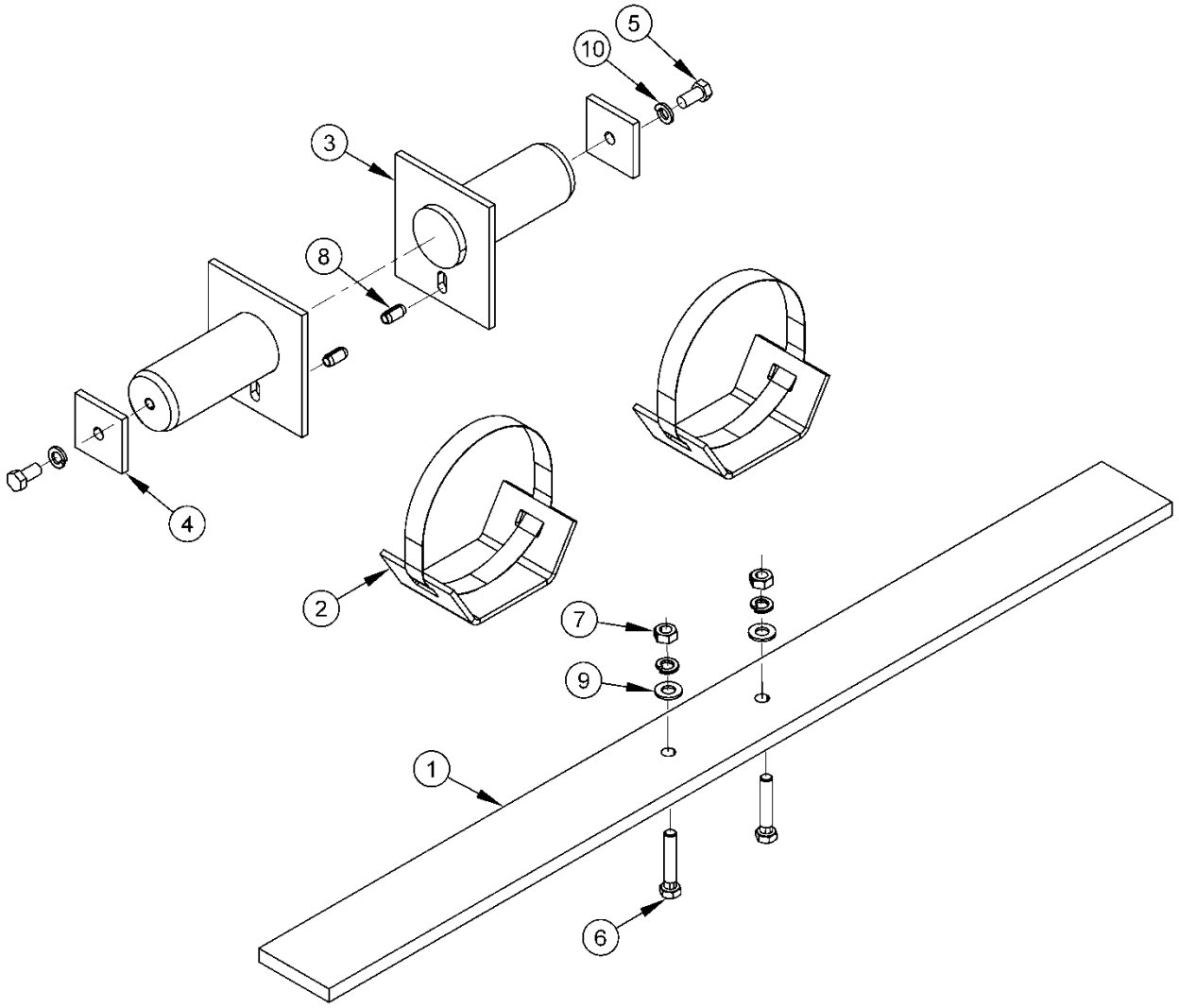
PACKER INSTALLATION KIT

372-1654

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-1654	INSTALLATION, Kit, Packer	-	REF
-1	272-8625	KIT, Mount, Cylinder, Packer (See Pg. 2011)	-	1
-2	272-9927	KIT, Mtg., Packer (See Pg. 2013)	-	1
-3	272-8627	ACTUATOR, Plate, Mtg. (See Pg. 2019)	-	1
-4	128-0475	ASSEMBLY, Packer Extension (See Pg. 2021)	-	1

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PACKER CYLINDER MOUNT KIT
272-8625



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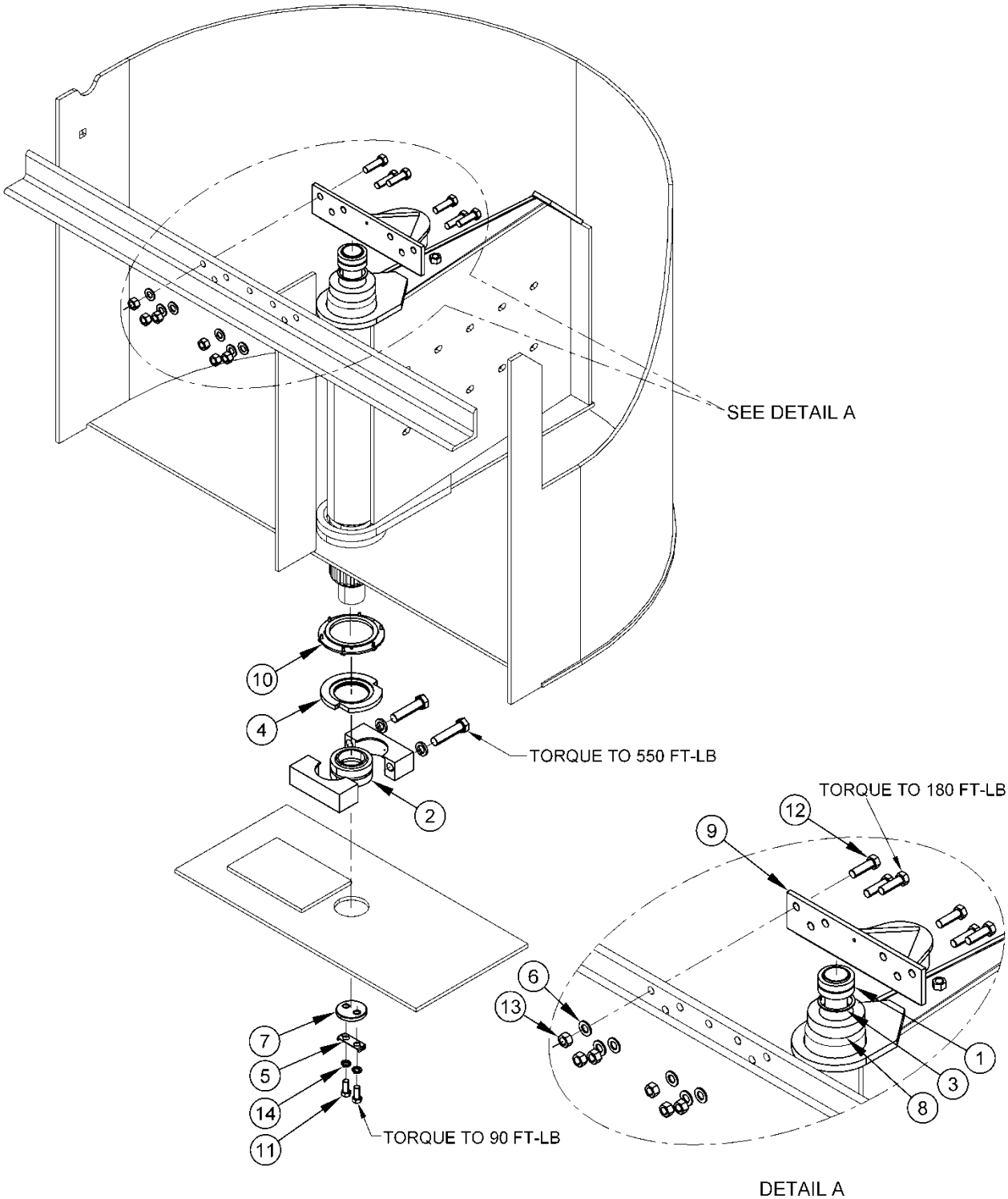
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PACKER CYLINDER MOUNT KIT
272-8625

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	272-8625	KIT, Mount, Cylinder, Packer	-	REF
1	014-1861	PAD, Wear	-	1
2	036-1898	ASSEMBLY, Clamp, Packer Cylinder	-	2
3	048-6237	PIN, Cylinder, Packer	-	2
4	234-0723	PIN, Retainer	-	2
5	FS070915	HHCS, 3/8”-16 x 3/4’’, Gr. 5	-	2
6	FS070930	HHCS, 3/8”-16 x 2”, Gr. 5	-	2
7	FS220900	NUT, ESNA, 3/8”-16, Gr. 5	-	2
8	FS360915	PIN, Roll, ESNA, 3/8” Dia.	-	2
9	FS510900	WASHER, Flat, 3/8”, Std., Plain	-	2
10	FS540900	WASHER, Lock, 3/8”-16, Plain	-	4

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PACKER MOUNTING KIT
272-9927



DETAIL A

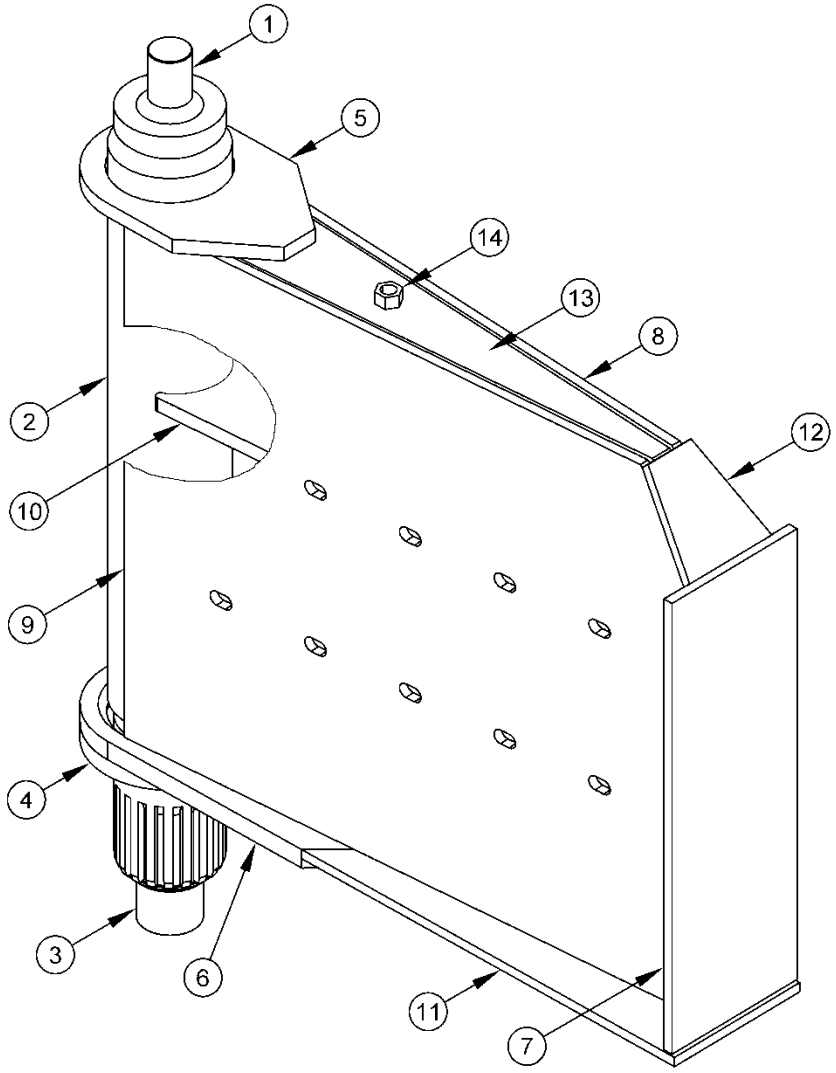
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PACKER MOUNTING KIT
272-9927

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	272-9927	KIT, Mtg., Packer	-	REF
1	003-4432	BEARING, Spherical, 2”	-	1
2	003-4438	BEARING, Spherical, Packer, Lower	-	1
3	026-2919-056	RING, Snap, 3-1/4”	-	1
4	040-2664	COLLAR, Support, Actuator Hub	-	1
5	053-2006	TAB, Lock, Packer Keeper	-	1
6	055-1391-008	WASHER, Steel, Hardened, 3/4" x 0.160” Thickness, Zinc, Plated	-	6
7	126-4562	KEEPER, Paddle Bearing, 3-1/2” Dia.	-	1
8	128-0466	PADDLE, Packer (See Pg. 2015)	-	1
9	211-9169	BRACKET, Mtg., Packer, Upper	-	1
10	272-8233	KIT, Seal, Packer (See Pg. 2017)	-	1
11	FSP071324	HHCS, 5/8”-11 x 1-1/2", Gr. 5, Plated	-	2
12	FSP071534	HHCS, 3/4"-10 x 2-1/2”, Gr. 5, Plated	-	6
13	FSP231500	NUT, Lock, 3/4”-10, Gr. 5, Plated	-	6
14	FSP541300	WASHER, Lock, 5/8’’, Plain	-	2

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Rapid Rail® Co-Collector
PACKER PADDLE
128-0466



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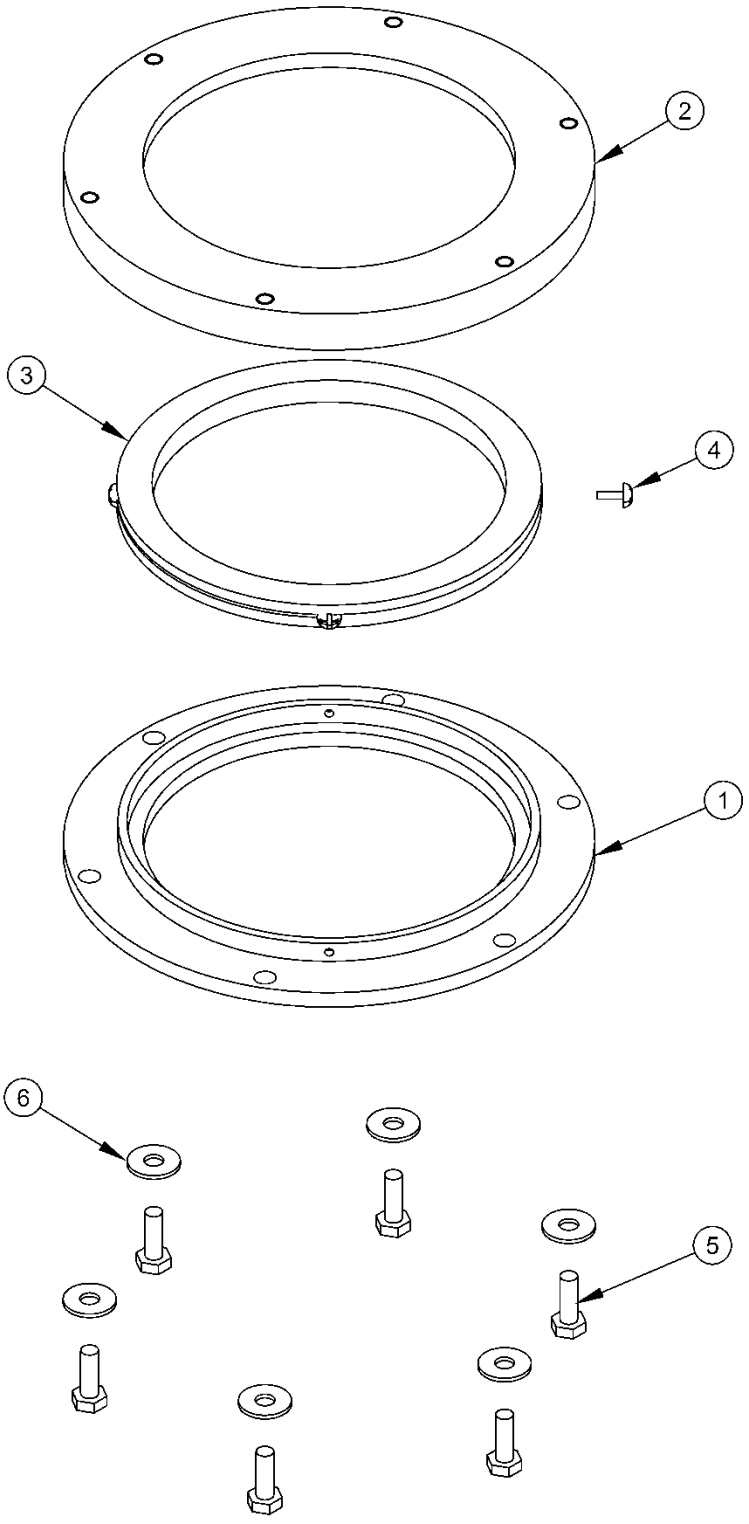
PACKER PADDLE

128-0466

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	128-0466	PADDLE, Packer	-	REF
1	008-9031	SHAFT, Paddle, Upper	-	1
2	008-9032	SHAFT, Paddle, Middle	-	1
3	008-9281	SHAFT, Packer, Lower	-	1
4	026-4928	RING, Paddle, Packer	-	1
5	040-2503	COLLAR, Top	-	1
6	040-2504	COLLAR, Packer, Bottom	-	1
7	134-9644-048	PLATE, Flat	-	1
8	234-0452	PLATE, Packer, Side	-	1
9	234-0453	PLATE, Face, Paddle, Packer	-	1
10	234-0454	PADDLE, Web, Packer	-	2
11	234-0455	PLATE, Packer, Bottom	-	1
12	234-0456	PLATE, Paddle, Corner	-	1
13	234-0457	PADDLE, Web, Packer	-	1
14	FS231500	NUT, Lock, 3/4"-10, Gr. 5	-	1

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PACKER SEAL KIT
272-8233



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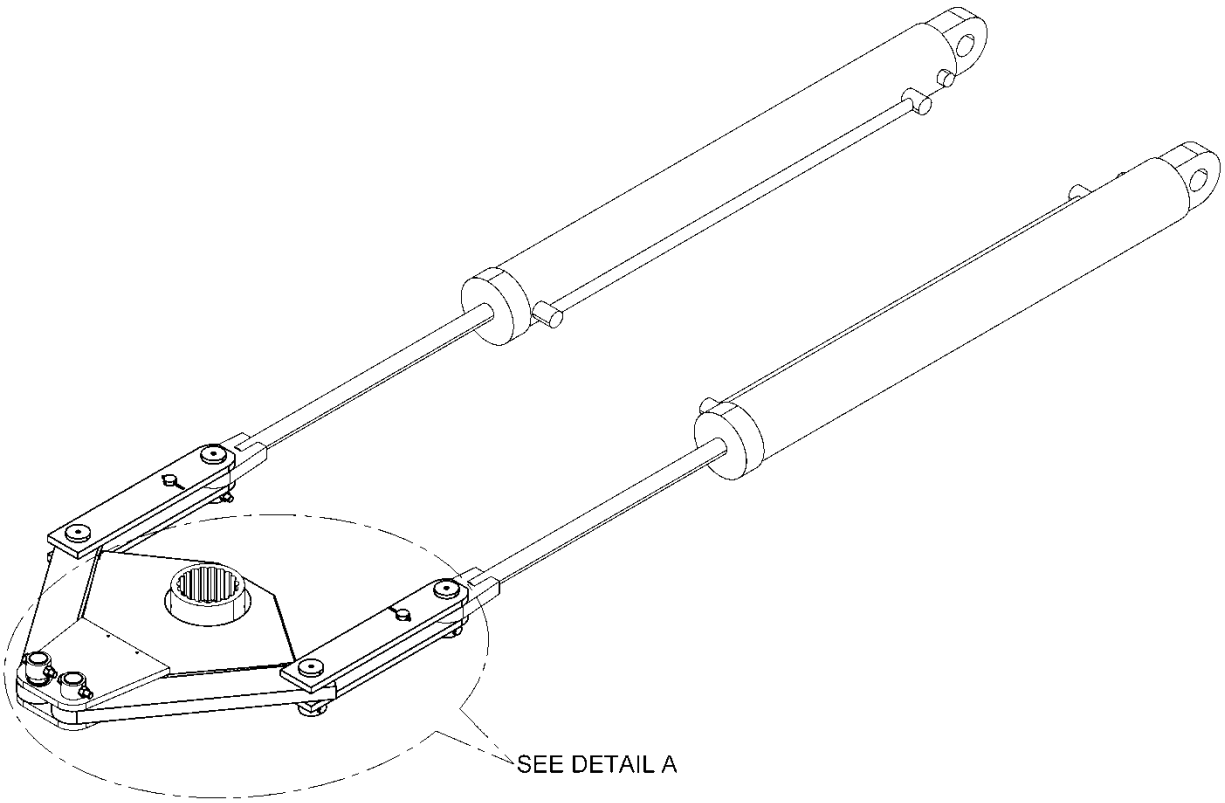
PACKER SEAL KIT

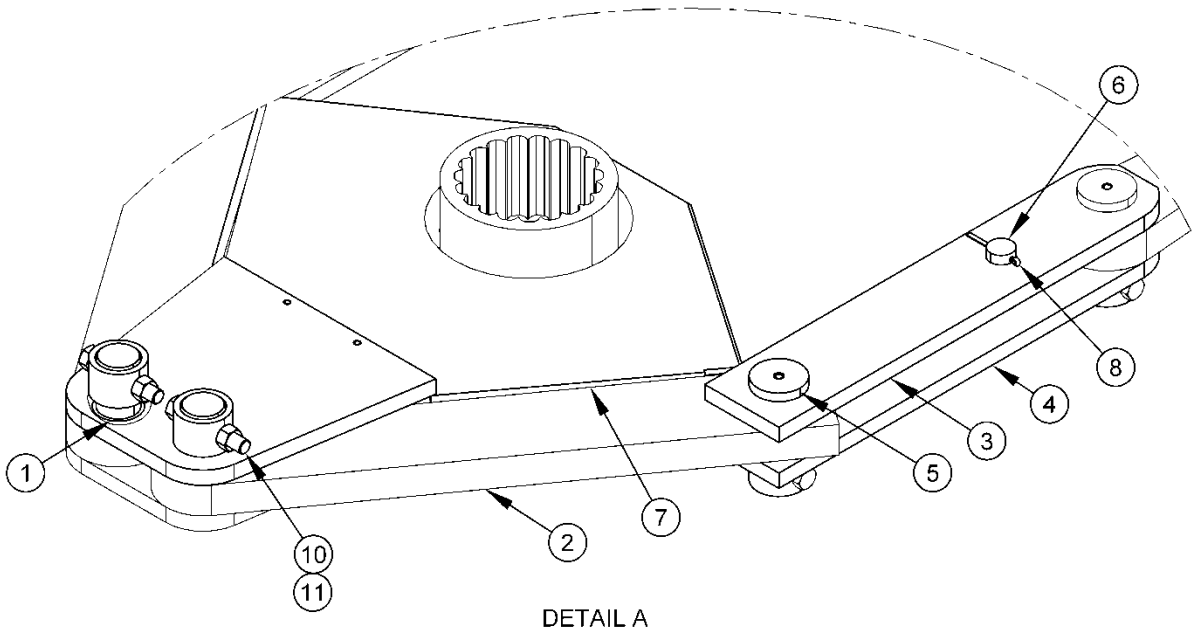
272-8233

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	272-8233	KIT, Seal, Packer	-	REF
1	006-3239	HOUSING, Seal, Lower	-	2
2	006-3240	HOUSING, Seal, Upper	-	1
3	022-3754	SEAL, Packer Shaft	-	1
4	047-2321-001	SCREW, Sheet Metal, 1/2", #8, Stainless	-	4
5	FS070715	HHCS, 1/4"-20 x 3/4", Gr. 5	-	6
6	FS520700	WASHER, Flat, 1/4" SAE, Plain	-	6

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Rapid Rail® Co-Collector
ACTUATOR MOUNTING PLATE
272-8627





DETAIL A

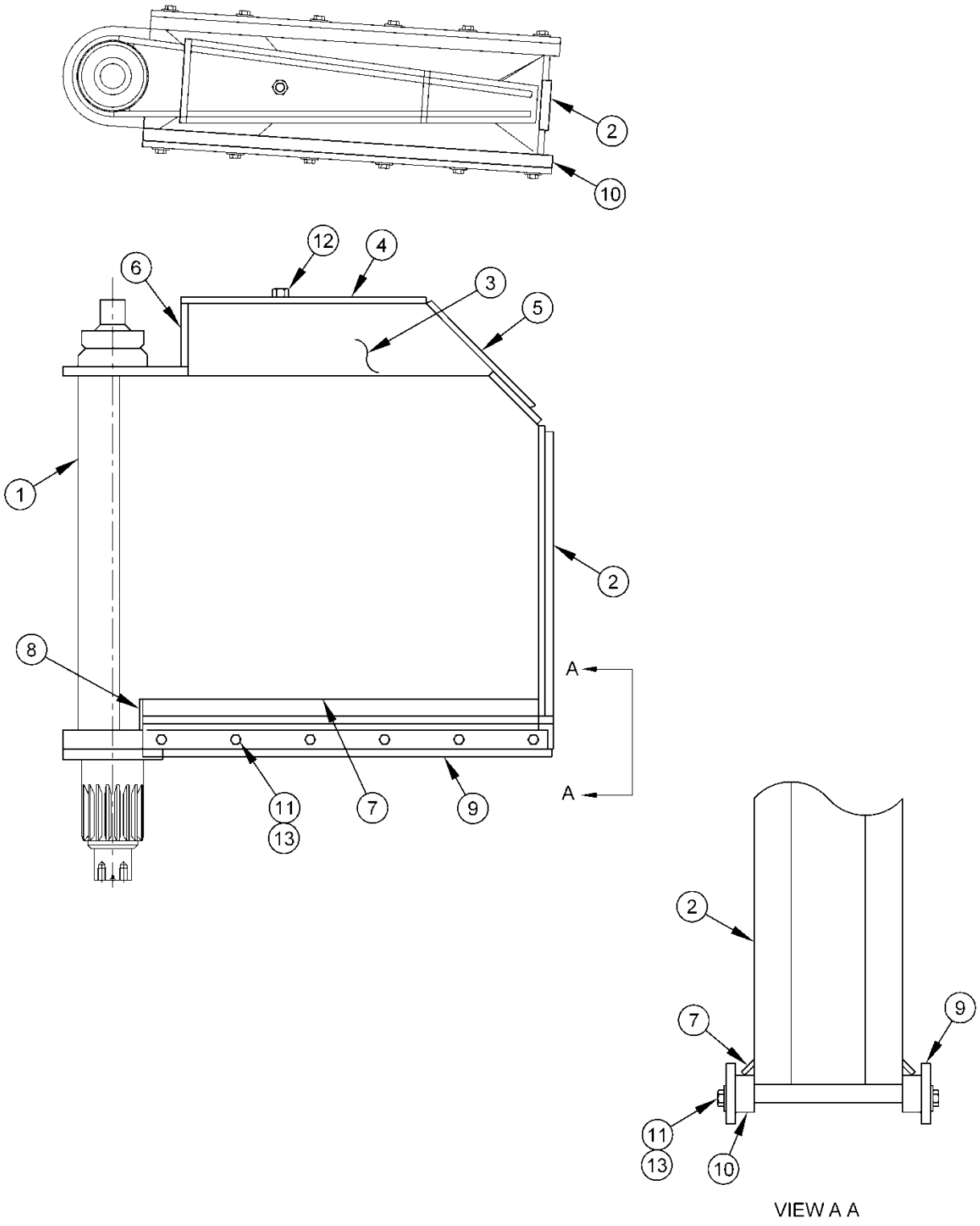
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Rapid Rail® Co-Collector
ACTUATOR MOUNTING PLATE
272-8627

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	272-8627	ACTUATOR, Plate, Mtg	-	REF
1	003-4576-004	RACES, Inner, Hardened Steel	-	4
2	005-4130	LINK, Single, 1-1/4” x 3-1/2”	-	2
3	005-4131	LINK, Double, 5/8” x 3-1/2”	-	2
4	005-4132	ASSEMBLY, Link	-	2
5	048-6231	PIN, Actuator, 2” Dia.	-	6
6	048-6238	PIN, Packer, 1” Dia.	-	2
7	272-8626	WELDMENT, Plate, Actuator	-	1
8	FS340630	PIN, Cotter, 3/16” x 2”, Steel	-	4
-9	FS420230	SCREW, Mach., Rd. Hd., 3/32” x 2”	-	2
10	FSP071140	HHCS, 1/2"-13 x 3”, Gr. 5, Plated	-	6
11	FSP231100	NUT, Lock, 1/2”-13, Gr. 5, Plated	-	6

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Rapid Rail® Co-Collector
PACKER EXTENSION ASSEMBLY
128-0475



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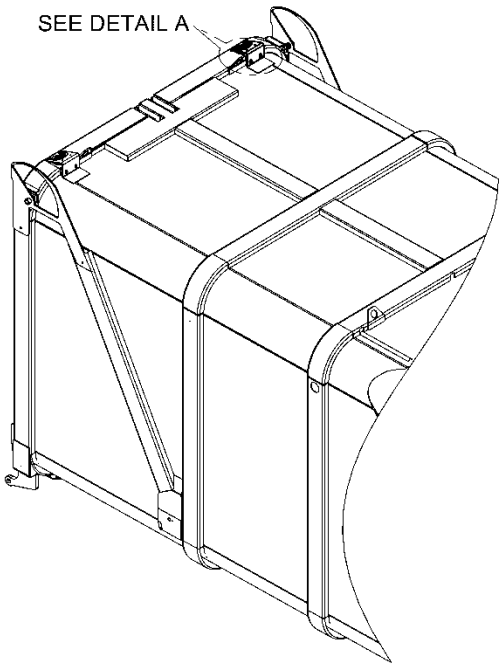
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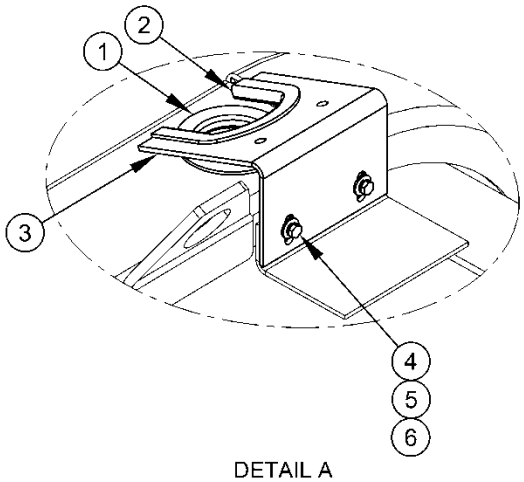
Rapid Rail® Co-Collector
PACKER EXTENSION ASSEMBLY
128-0475

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	128-0475	ASSEMBLY, Packer Extension	-	REF
1	128-0466	PADDLE, Packer (See Pg. 2015)	-	REF
2	234-0554-041	BAR, Filler, 3/8” x 4”	-	1
3	234-2154	PLATE, Side Extension, DC	-	2
4	234-2155	PLATE, Top Extension, DC	-	1
5	234-2156	PLATE, Angled Extension, DC	-	1
6	234-2157	PLATE, Side Extension, DC	-	1
7	234-1081	PLATE, Sweeper, Reinforcing	-	2
8	234-1082	CAP, Sweeper	-	2
9	234-1083	PLATE, Sweeper	-	2
10	311-0433	BRACKET, Sweeper	-	2
11	FS071124	HHCS, 1/2"-13 x 1-1/2”, Gr. 5	-	12
12	FS231500	NUT, Lock, 3/4"-10, Gr. 5	-	1
13	FS511100	WASHER, Flat, 1/2” Std., Plain	-	12

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Rapid Rail® Co-Collector
SPLIT BODY BRUSH GUARD KIT
372-2875





DETAIL A

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SPLIT BODY BRUSH GUARD KIT

372-2875

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-2875	KIT, Guard, Brush, Split Body	-	REF
1	022-3925-006	GUARD, 1/2" Edge, 6”	-	2
2	022-3925-012	GUARD, 1/2" Edge, 12”	-	2
3	113-3544-002	COVER, Brush Guard, Rear	-	2
4	FS070715	HHCS, 1/4"-20 x 3/4", Gr. 5	-	4
5	FS510700	WASHER, Flat, 1/4”, Std., Plain	-	4
6	FS550700	WASHER, Lock, 1/4", Plated	-	4

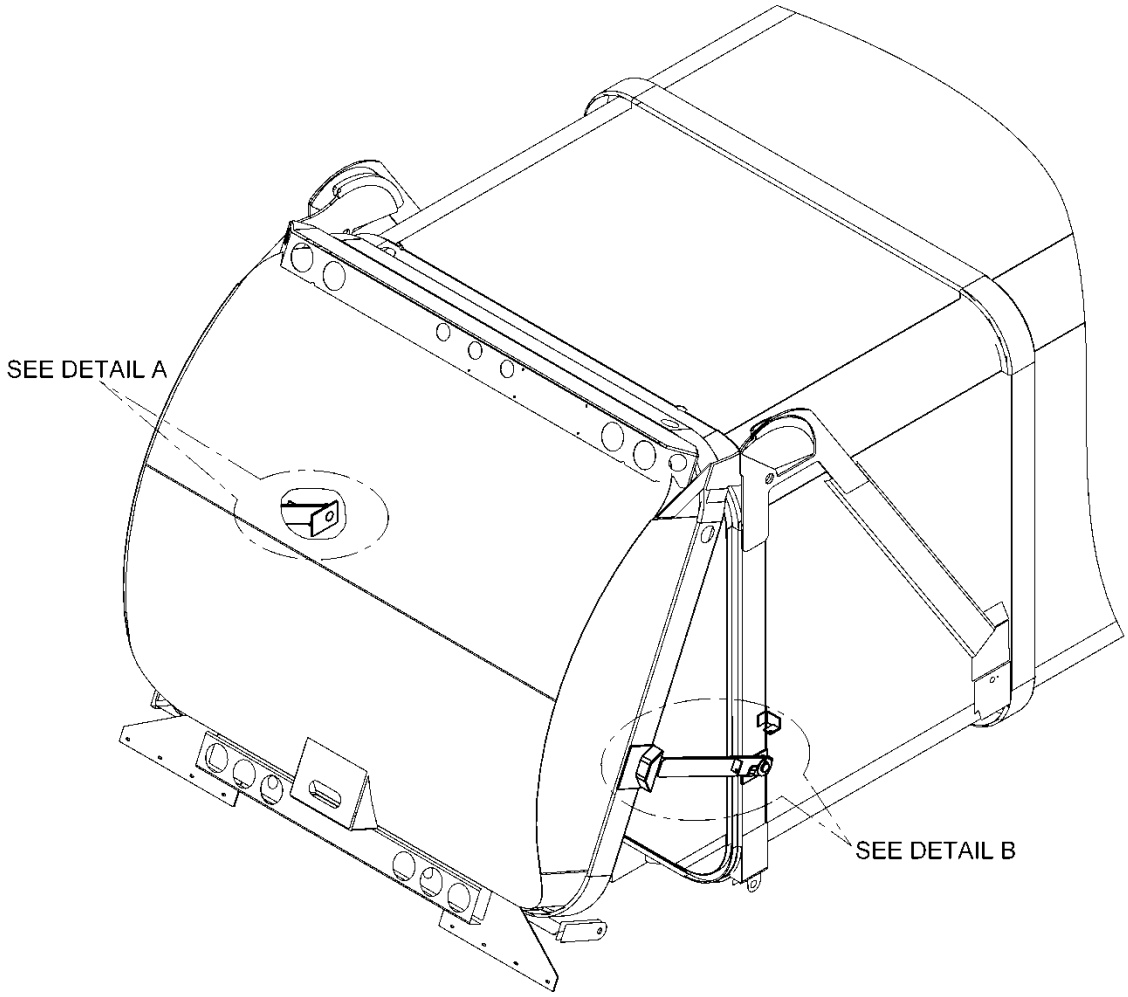
7 YARD SPLIT TAILGATE ASSEMBLY

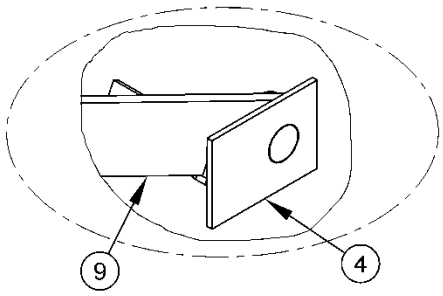
372-4990-007

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-4990-007	ASSEMBLY, Tailgate, Split, ANSI, 7 Yd.	-	REF
-1	237-8837	WELDMENT, Tailgate, 7 Yd.	-	1
-2	372-0993	KIT, Tailgate Prop (See Pg. 2025)	-	1
-3	372-4990-002	KIT, Electrical, Tailgate, ANSI (See Section 6)	-	1
-4	FSP400420	SCREW, Mach., Rd. Hd., #10-32 x 1”	-	4
-5	FSP240400	NUT, Lock, #10-32, Gr. 5, Plated	-	4

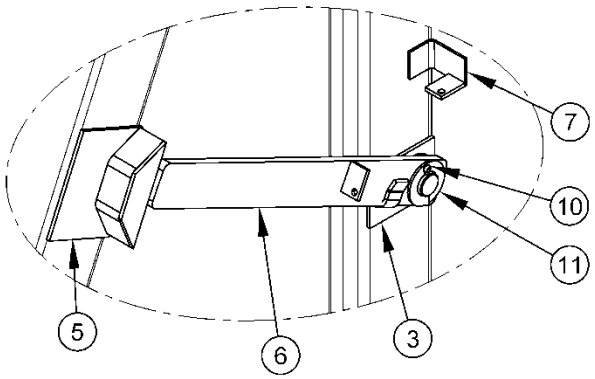
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Rapid Rail® Co-Collector
TAILGATE PROP KIT
372-0993





DETAIL A



DETAIL B

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Rapid Rail® Co-Collector

TAILGATE PROP KIT

372-0993

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-0993	KIT, Tailgate Prop	-	REF
-1	043-0796	CHAIN, Steel Sash, #35, 10”	-	2
-2	048-5840	PIN, Detent Ring	-	2
3	048-7177	WELDMENT, Prop Mount, Pin	-	1
4	048-7218	WELDMENT, Prop Mount, Pin, Curb	-	1
5	066-1202	WELDMENT, Tailgate Prop, Pocket	-	2
6	126-6389	BRACE, Tailgate Prop, Street	-	1
7	126-6390	BRACE, Tailgate Prop, Street	-	1
-8	126-6446	BRACE, Tailgate Prop, Curb	-	1
9	126-6447	BRACE, Tailgate Prop, Curb	-	1
10	FS340732	PIN, Cotter, 1/4" x 2-1/4”, Steel	-	2
11	FS522400	WASHER, Flat, 1-1/2” SAE, Plain	-	6

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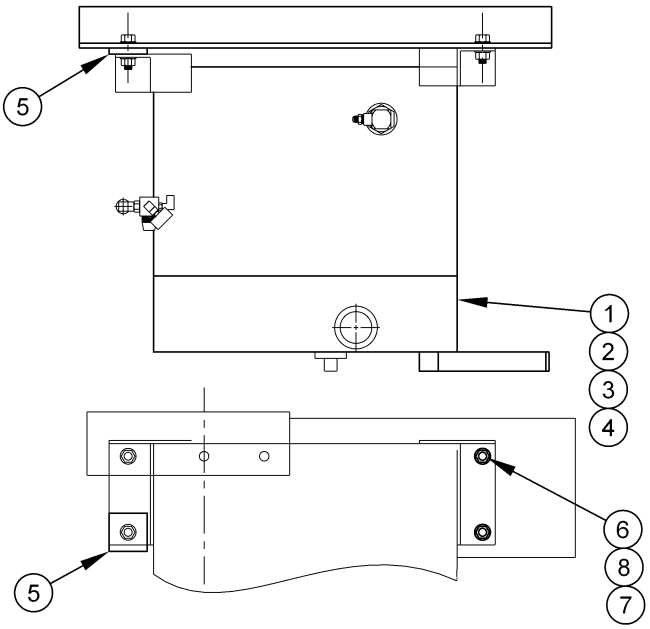
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OIL TANK ASSEMBLIES

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Rapid Rail® Co-Collector
OIL TANK MOUNTING KIT
272-6616



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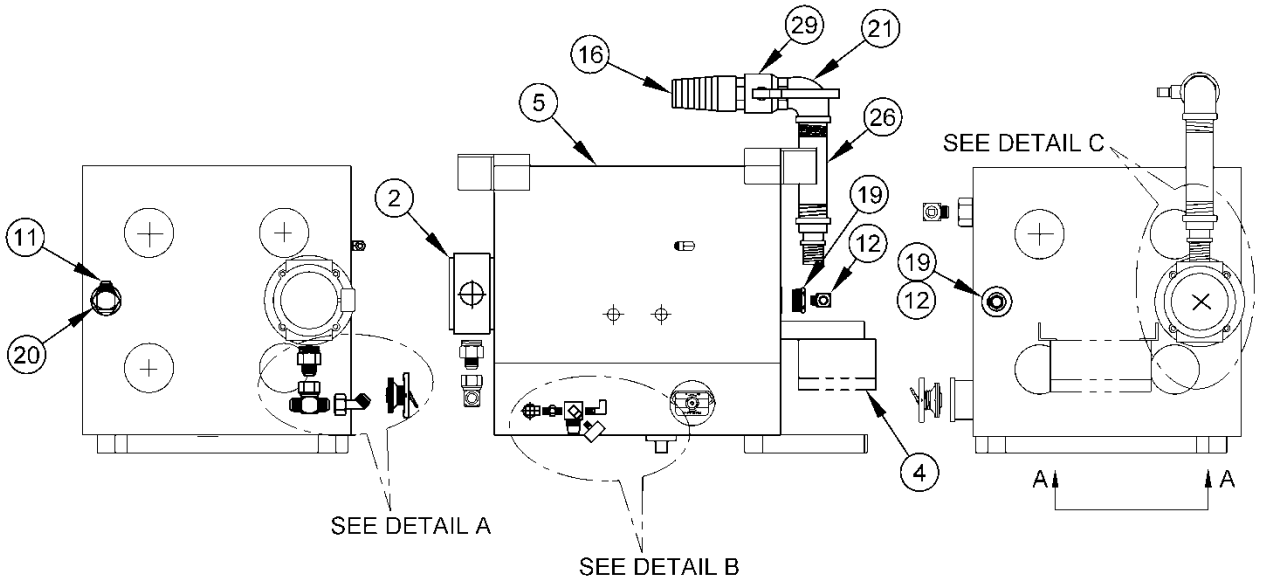
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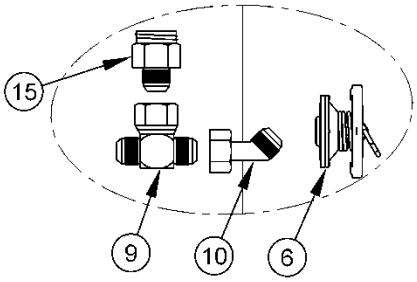
Rapid Rail® Co-Collector
OIL TANK MOUNTING KIT
272-6616

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	272-6616	KIT, Mtg., Oil Tank	-	REF
-	272-6616-001	KIT, Mtg., Oil Tank, Pressurized	A	REF
-	272-6616-002	KIT, Mtg., Oil Tank, Non-Pressurized	B	REF
-	272-6616-003	KIT, Mtg., Oil Tank, Pressurized	C	REF
-	272-6616-004	KIT, Mtg., Oil Tank, Non-Pressurized	D	REF
1	020-2166	ASSEMBLY, Hydraulics, Oil Tank (See Pg. 2031)	A	1
2	020-2177	ASSEMBLY, Oil Tank, Non-Pressurized (See Pg. 2033)	B	1
3	020-2470	ASSEMBLY, Oil Tank, Pressurized (See Pg. 2035)	C	1
4	020-2471	ASSEMBLY, Oil Tank, Non-Pressurized (See Pg. 2035)	D	1
5	015-3033	SPACER, Tank	-	1
6	FS071334	HHCS, 5/8”-11, Gr. 5, Plated	-	4
7	FS231300	NUT, Lock, 5/8”-11, Gr. 5	-	4
8	FS521300	WASHER, Flat, 5/8”, SAE, Plain	-	8

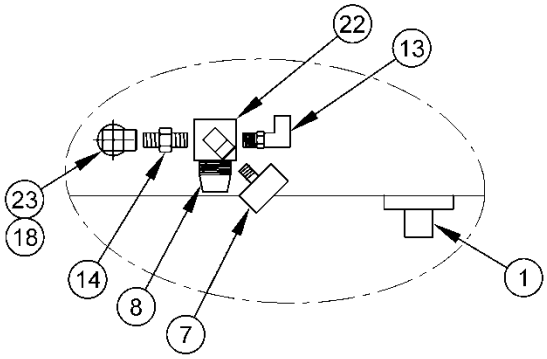
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OIL TANK HYDRAULICS ASSEMBLY
020-2166

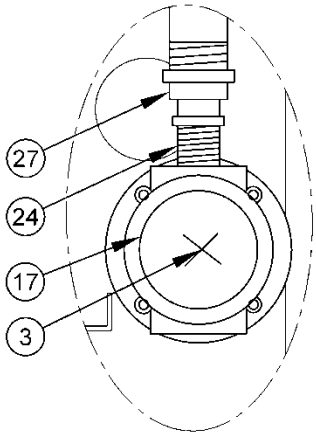




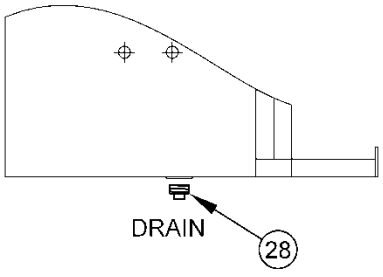
DETAIL A



DETAIL B



DETAIL C



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OIL TANK HYDRAULICS ASSEMBLY

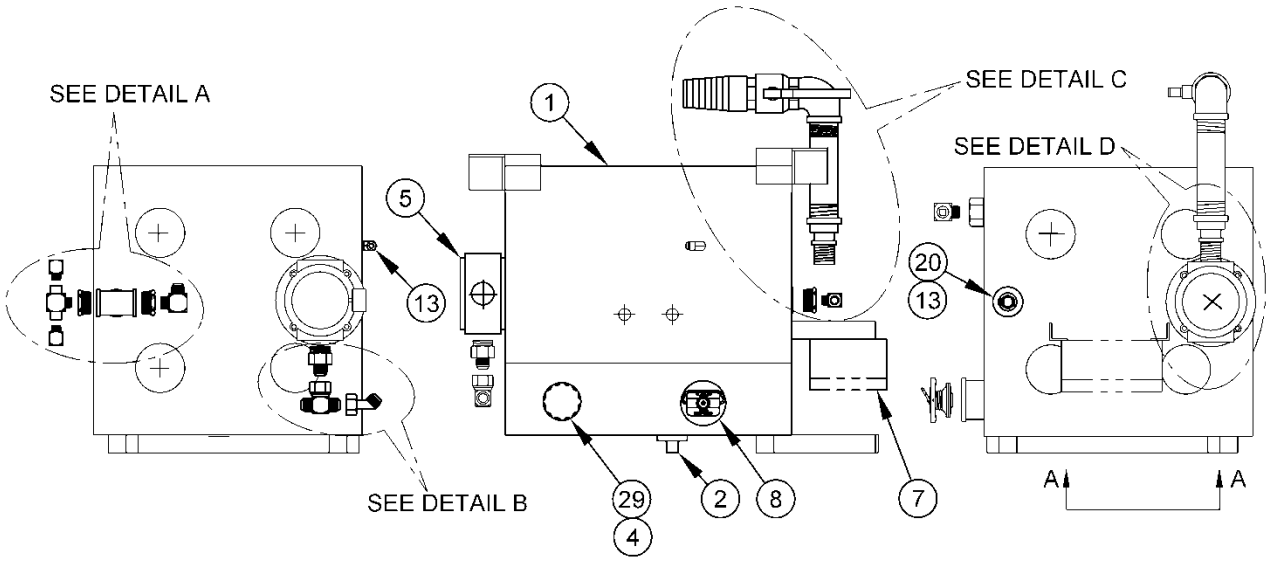
020-2166

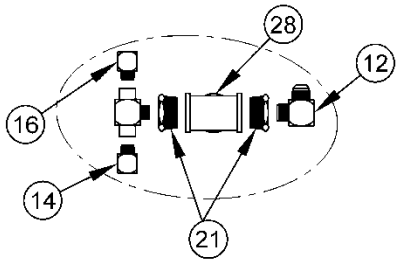
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	020-2166	ASSEMBLY, Hydraulics, Oil Tank	-	REF
1	020-2167	ASSEMBLY, Glass, Sight	-	1
2	075-0759	ASSEMBLY, Filter	-	1
3	075-0760	STRAINER, Suction Line	-	1
4	018-0000	ASSEMBLY, Box, Junction	-	REF
5	020-2155	WELDMENT, Oil Tank	-	1
6	L6-P3	CAP, Fill	-	1
7	031-5602-001	GAUGE, Pressure, 0-30 PSI	-	1
8	031-5602	REGULATOR, Air	-	1
9	054-3623-010	TEE, Swivel, Female, Tube 1-5/16”-12 x 1”-16	-	1
10	054-3629-010	ELBOW, 45°-37° Flare, Tube 1-5/16”-12 x Swivel 1”-16, Female	-	1
11	054-3666-010	ELBOW, 90°, Swivel, 1-3/16”-12 x 3/4"-14, NPT/JIC	-	1
12	054-3667-007	ADAPTER, Male, 37° Flare, Tube 3/4”-16 x 1/2" NPT	-	2
13	054-5980	ELBOW, 1/4" NPT x 1/4" Air	-	1
14	054-7373	NIPPLE, Hex, 1/4" NPT	-	1
15	058-3205-014	REDUCER, Str. Thd., SAE 1-5/16”-12 x 1" to 37° JIC 1-5/8”-12 x 1-1/4”	-	1
16	058-8579-006	FITTING, Split, Flange/NPT, 2”	-	1
17	075-0760-001	ELEMENT, Filter, Suction	-	1
18	FS591507	BUSHING, Reducing, 3/4" x 1/4", Malleable, #150 and #300	-	1
19	FS592211	BUSHING, Reducing, 1-1/4” to 1/2", Malleable, #150 and #300	-	1
20	FS592220	BUSHING, Reducing, Malleable, 1-1/4’’ x 1’’, Red	-	1
21	FS743000	ELBOW, 90°, Female to Female Malleable, #150, 2”	-	1
22	FS820400	ELBOW, 90°, Street, 1/8” NPT	-	1
23	FS820700	ELBOW, Street, 90°, Malleable, #150 and #300, 1/4”	-	1
24	FS882200	NIPPLE, Std., 1-1/4'', Black	-	1
26	FS883090	NIPPLE, Std., 2” NPT x 8", Black	-	1
27	FS933023	REDUCER, Bell, Male to Female, 2” x 1-3/8'', NPT	-	1
28	FS902201	PLUG, 1-1/4” NPT	-	2
29	031-2616	VALVE, Shut Off, Suction Line, 2"	-	1

Note: Item 25 is not available.

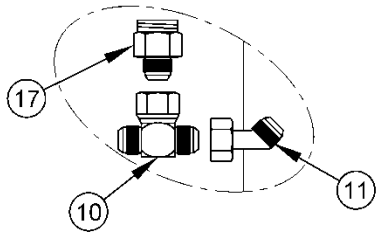
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NON-PRESSURIZED OIL TANK ASSEMBLY
020-2177

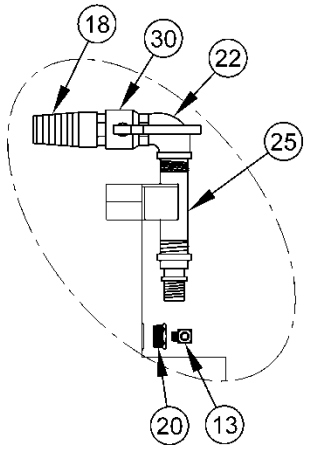




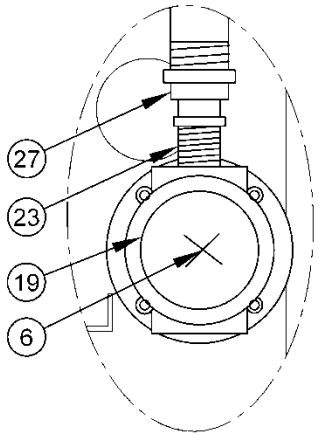
DETAIL A



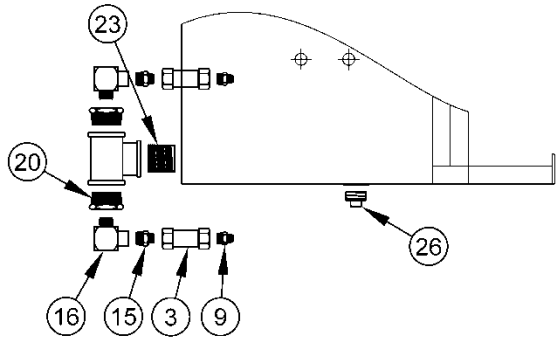
DETAIL B



DETAIL C



DETAIL D



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Rapid Rail® Co-Collector
NON-PRESSURIZED OIL TANK ASSEMBLY
020-2177

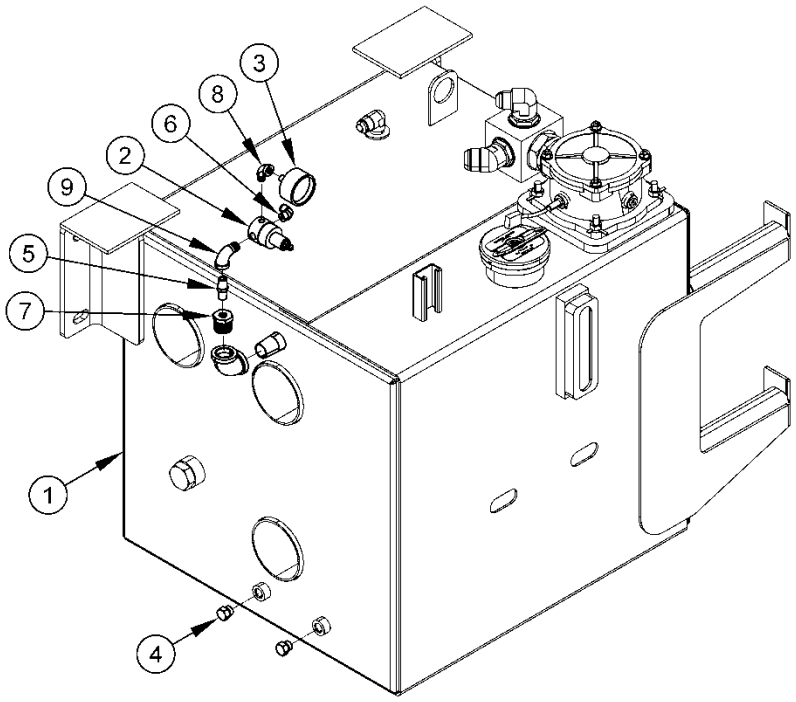
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	020-2177	ASSEMBLY, Oil Tank, Non-Pressurized	-	REF
1	020-2155	WELDMENT, Oil Tank	-	1
2	067-0630	GAUGE, Sight, Thermometer	-	1
3	031-2623	VALVE, Control, Fixed Flow, 3/8” NPT Female Ports	-	2
4	075-0712	FILTER, Breather	-	1
5	075-0759	ASSEMBLY, Filter	-	1
6	075-0760	STRAINER, Suction Line	-	1
7	E1800	ASSEMBLY, Box, Junction	-	REF
8	L6-P3	CAP, Fill	-	1
9	054-3526-009	ADAPTER, 3/8” NPT/JIC	-	2
10	054-3623-010	TEE, Swivel, Female, Tube 1-5/16”-12 x 1”-16	-	1
11	054-3629-010	ELBOW, 45°-37° Flare, Tube 1-5/16”-12 x Swivel 1”-16, Female	-	1
12	054-3666-011	ELBOW, 90°, Swivel, 1-5/16”-12 x 1"-11.5, NPT/JIC	-	1
13	054-3667-007	ADAPTER, Male, 37° Flare, Tube 3/4”-16 x 1/2" NPT	-	2
14	054-8793	TEE, 1/2” NPT	-	1
15	054-9018-001	ADAPTER, 1/2"-3/8” NPT	-	2
16	054-9019-001	ELBOW, 90°, 1/2" NPT	-	2
17	058-3205-014	REDUCER, Str. Thd., SAE 1-5/16”-12 x 1" to 37° JIC 1-5/8”-12 x 1-1/4”	-	1
18	058-8579-006	FITTING, Split, Flange/NPT, 2”	-	1
19	075-0760-001	ELEMENT, Filter, Suction	-	1
20	FS592211	REDUCER, 1-1/4” to 1/2"	-	3
21	FS592220	BUSHING, Reducing, Malleable, 1-1/4'' x 1'', Red	-	2
22	FS743000	ELBOW, 90°, Female to Female Malleable, #150, 2”	-	1
23	FS892200	NIPPLE, Close, 1-1/4”	-	3
25	FS883090	NIPPLE, Std., 2” NPT x 8", Black	-	1
26	FS902201	PLUG, 1-1/4” NPT	-	2
27	FS933023	REDUCER, Bell, Male to Female, 2” x 1-3/8'', NPT	-	1
28	FS942200	TEE, Pipe, Black, 1-1/4”	-	1
29	FS881530	NIPPLE, 3/4” x 2”	-	1
30	031-2616	VALVE, Shut Off, Suction Line, 2"	-	1

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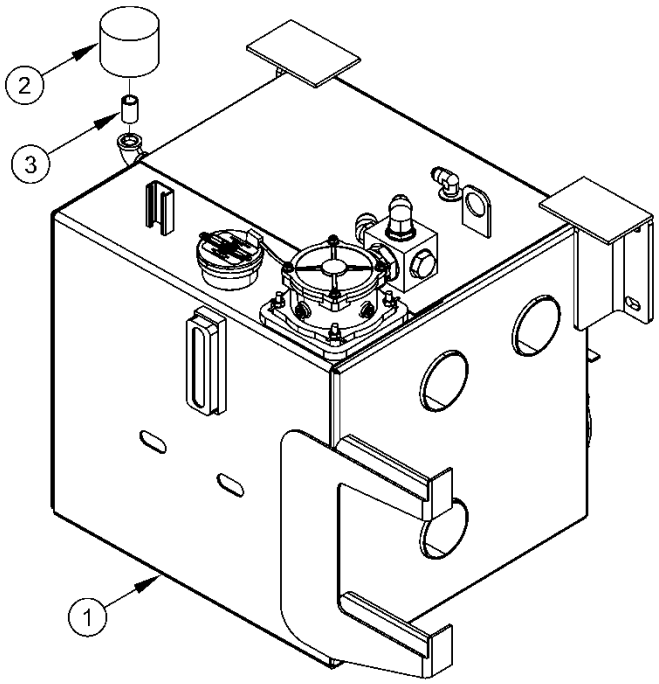
PRESSURIZED OIL TANK ASSEMBLY

020-2470



NON-PRESSURIZED OIL TANK ASSEMBLY

020-2471



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PRESSURIZED OIL TANK ASSEMBLY

020-2470

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	020-2470	ASSEMBLY, Oil Tank, Pressurized	-	REF
1	020-2469	ASSEMBLY, Oil Tank (See Pg. 2037)	-	1
2	031-5602	VALVE, Regulator, Air	-	1
3	031-5602-001	GAUGE, Pressure, 0-30 PSI	-	1
4	054-3342-005	PLUG, Male, 3/8” SAE #6	-	2
5	054-7373	NIPPLE, Steel, Hex, 1/4" NPT	-	1
6	054-8470-004	ELBOW, Connection, Air Line	-	1
7	FS601507	REDUCER, 3/4" MNPT x 1/4" FNPT	-	1
8	FS820400	ELBOW, Street, 1/8” NPT	-	1
9	FS820700	ELBOW, Street, 1/4" NPT	-	1

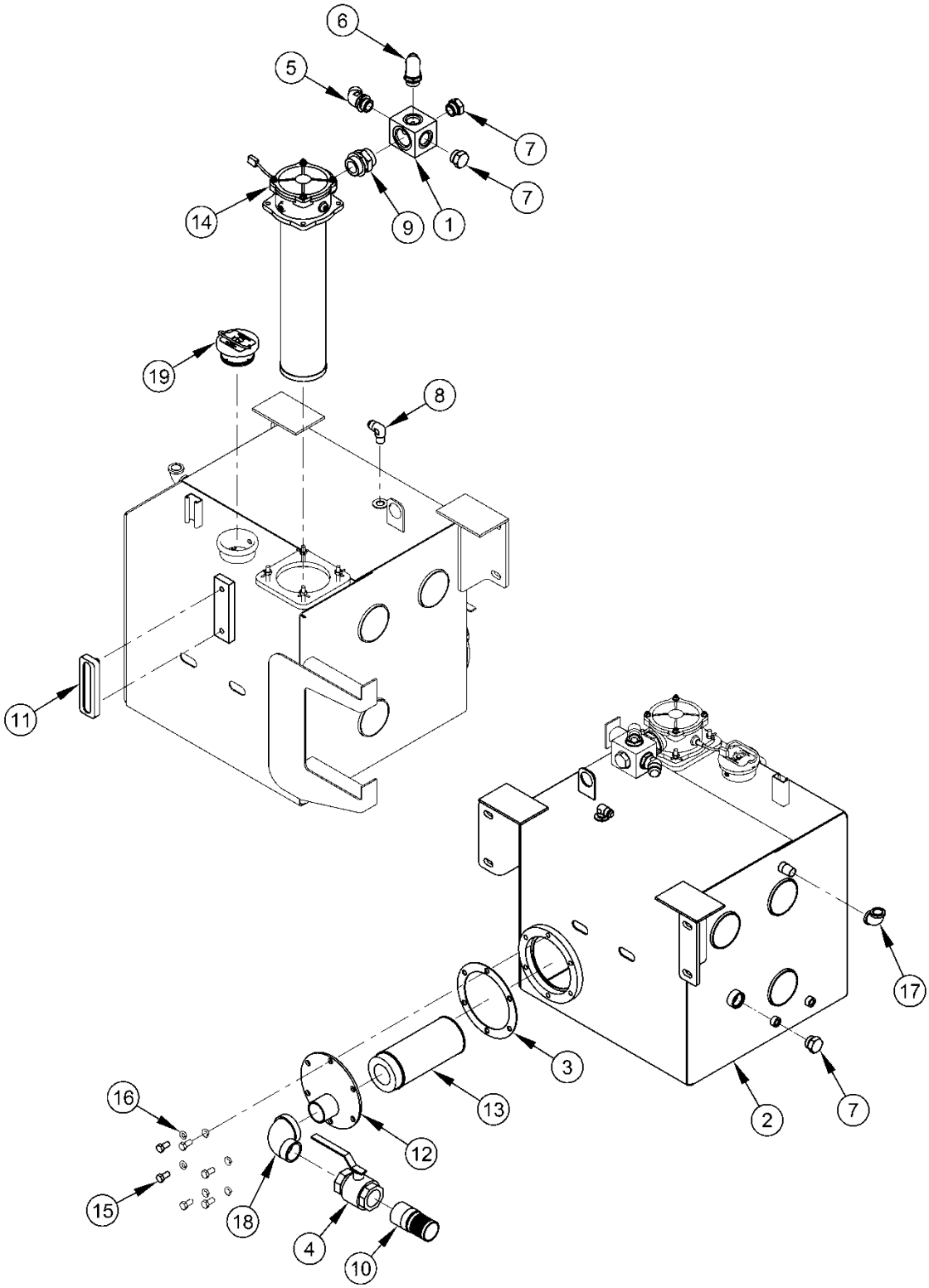
NON-PRESSURIZED OIL TANK ASSEMBLY

020-2471

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	020-2471	ASSEMBLY, Oil Tank, Non-Pressurized	-	REF
1	020-2469	ASSEMBLY, Oil Tank (See Pg. 2037)	-	1
2	075-0712	FILTER, Breather	-	1
3	FS881530	NIPPLE, 3/4" MNPT x 2”	-	1

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OIL TANK ASSEMBLY
020-2469



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OIL TANK ASSEMBLY
020-2469

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	020-2649	ASSEMBLY, Oil Tank	-	REF
1	002-1244	MANIFOLD, Line, Return	-	1
2	020-2468	WELDMENT, Oil Tank	-	1
3	022-2707	GASKET, Oil Tank	-	1
4	031-2616	VALVE, Shut Off, Suction Line, 2"	-	1
5	054-3005-010	ELBOW, Male, 45°, Tube to Tube Thread, 1''	-	1
6	054-3237-003	ELBOW, Male, Reducing, 90°, Tube 1-1/16"-12 x 3/4" to Str. Thd. 1-5/16"-12 x1"	-	1
7	054-3342-010	PLUG, Str. Thd., 1-5/16"-12 x 1", #16	-	5
8	054-3667-007	ADAPTER, Male, 37° Flare, Tube 3/4"-16 x 1/2" NPT	-	1
9	054-8507-012	ADAPTER, Male, SAE, O-Ring, 1-7/8"-12 x 1-1/2", #24	-	1
10	058-8579-006	FITTING, Suction Hose, Split Flange, 2" NPT	-	1
11	067-0630	SIGHT GAUGE, Thermometer	-	1
12	074-3626	FLANGE, Oil Tank, Baffled	-	1
13	075-0578	STRAINER, Suction	-	1
14	075-0912	FILTER, Return Line (See Section 5)	-	1
15	FS071120	HHCS, 1/2"-13 x 1", Gr. 5	-	6
16	FS541100	WASHER, Lock, 1/2", Plain	-	6
17	FS761515	FITTING, Elbow, 90° x 3/4" FNPT	-	1
18	FS823000	ELBOW, Street, 90°, Malleable, #150 and #300, 2" NPT	-	1
19	L6-P3	CAP, Fill	-	1

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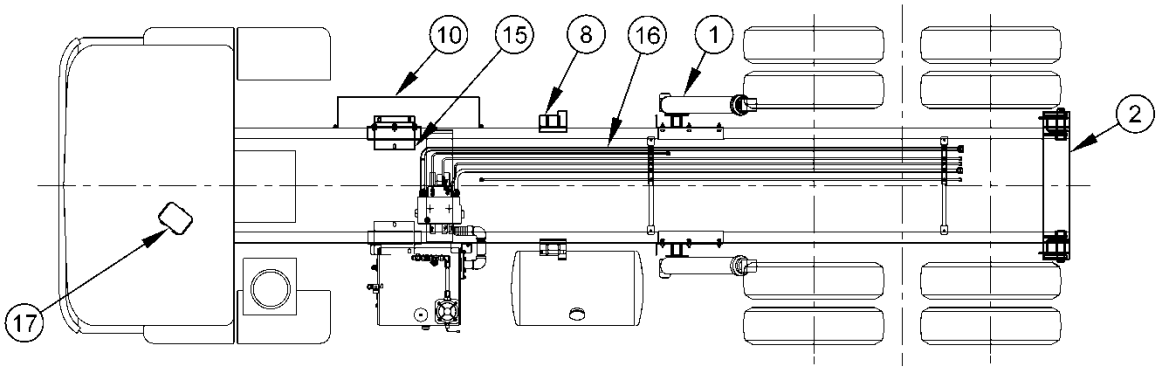
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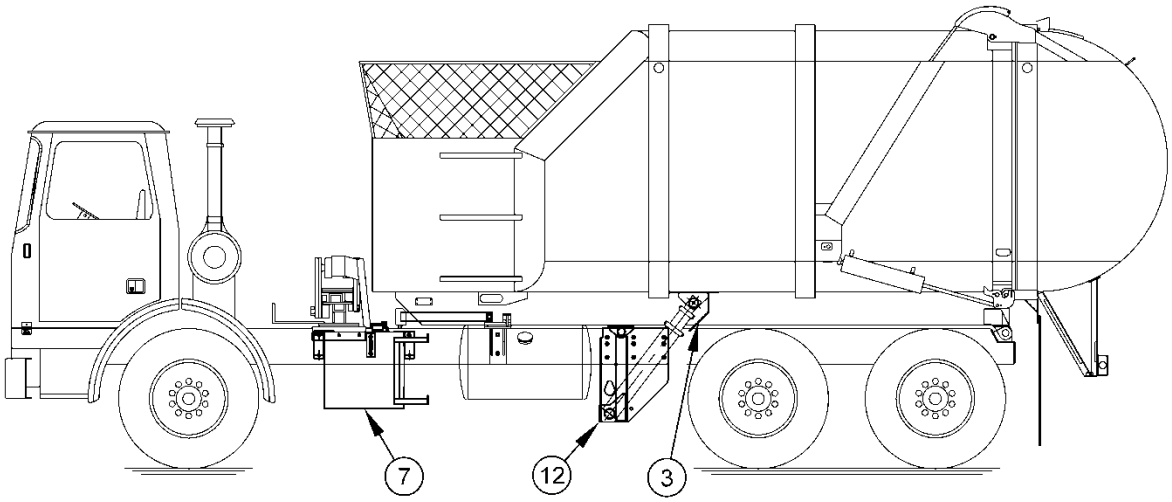
MOUNTING KITS

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STANDARD SPLIT BODY MOUNTING KIT
372-0392



TANDEM AXLE CHASSIS



STREET SIDE ELEVATION VIEW

SHEET 1 OF 2

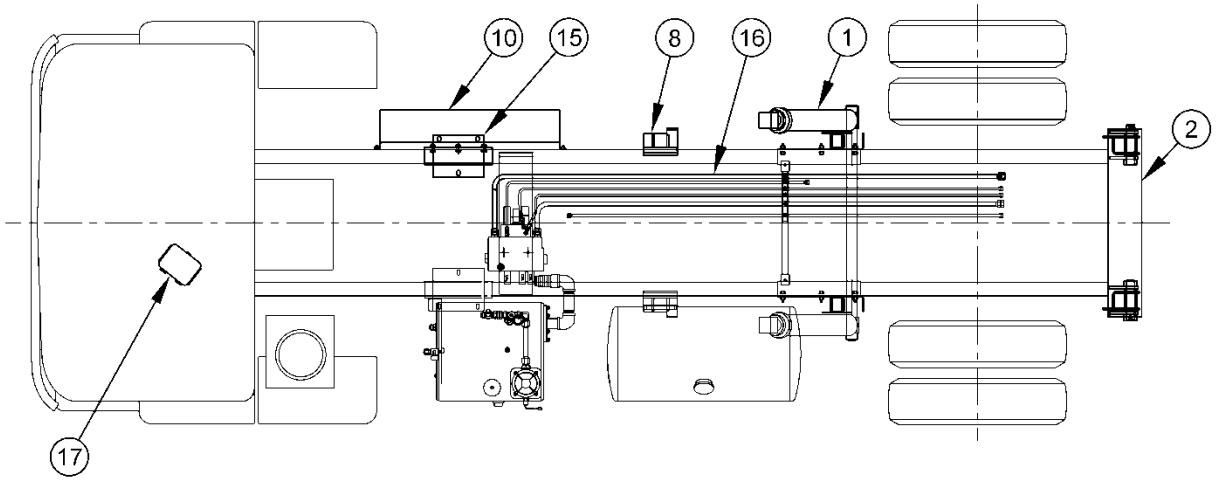
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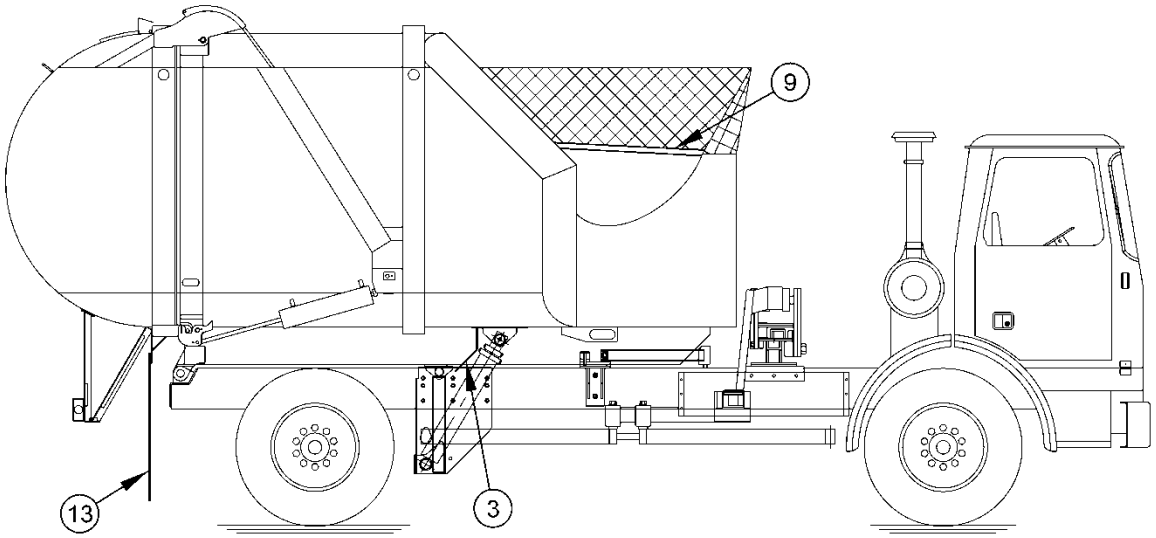
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STANDARD SPLIT BODY MOUNTING KIT
372-0392



SINGLE AXLE CHASSIS



CURB SIDE ELEVATION VIEW

SHEET 2 OF 2

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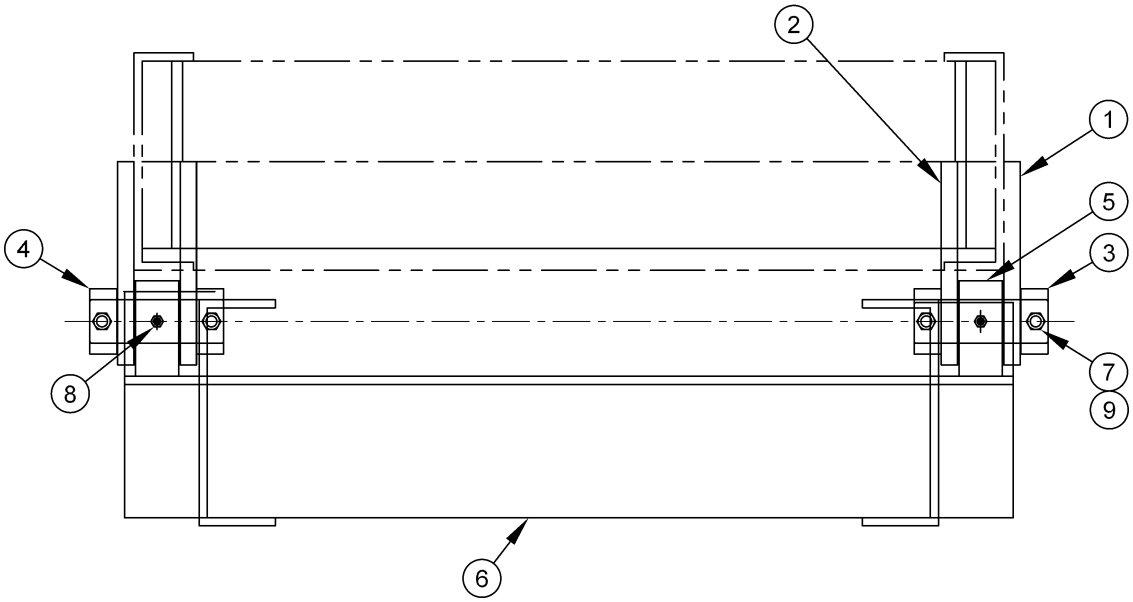
Rapid Rail® Co-Collector
STANDARD SPLIT BODY MOUNTING KIT
372-0392

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-0392	KIT, Mtg., Split Body, Std.	-	REF
1	001-6445	CYLINDER, Body Hoist (See Section 5)	-	REF
2	005-3923	INSTALLATION, Body Pivot (See Pg. 2045)	-	1
3	035-2895	GUARD, Splash, Hoist Cylinder	-	2
7	272-6616	KIT, Mtg., Oil Tank (See Pg. 2029)	-	REF
8	272-6617	KIT, Mtg., Support, Body Prop (See Pg. 2047)	-	1
9	272-6842	KIT, Mtg., Rubber, Hopper (See Pg. 2049)	-	1
10	272-7844-003	KIT, Mount, 3-Battery Box (See Pg. 2051)	-	REF
-11	272-8228	KIT, Air Supply (See Section 4)	-	1
12	272-8237	KIT, Saddle, Hoist (See Pg. 2055)	-	1
13	272-8684	KIT, Mudflap (See Pg. 2149)	-	1
15	272-9662	KIT, Mount, Loader (See Pg. 2057)	-	1
16	372-5917	KIT, Hydraulics, Chassis (See Section 4)	-	1
17	372-2933	KIT, Electrical, Mtg. (See Section 6)	-	1

Note: Items 4, 5, 6, 14, 18, 19, 20 and 21 are not available.

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BODY PIVOT INSTALLATION
005-3923



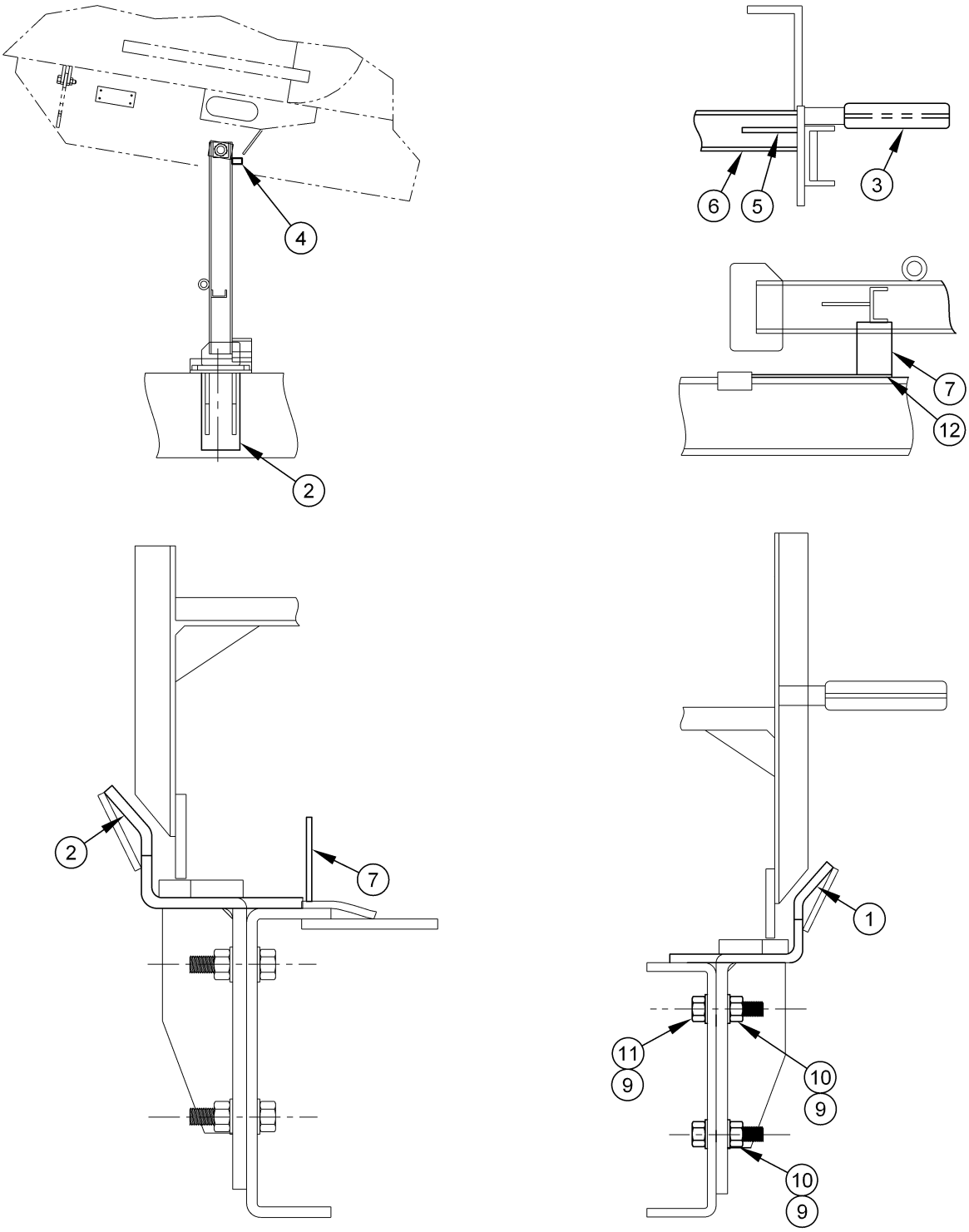
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BODY PIVOT INSTALLATION
005-3923

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	005-3923	INSTALLATION, Body Pivot	-	REF
1	005-3924	HINGE, Outer, Body Pivot	-	2
2	005-3925	HINGE, Inner, Body Pivot	-	2
3	040-2483	COLLAR, Pivot Pin, Body	-	4
4	048-5835	PIN, Body Pivot, 2” Dia.	-	2
5	177-3172	SUPPORT, Rear, Body Pivot	-	2
6	211-6281	PLATE, Bracket, Body Hinge	-	1
7	FS071140	HHCS, 1/2"-13 x 3”, Gr. 5	-	4
8	FS190700	FITTING, Grease, Str., 1/4"	-	2
9	FS231100	NUT, Lock, 1/2”, Gr. 5	-	4

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BODY PROP SUPPORT MOUNTING KIT
272-6617



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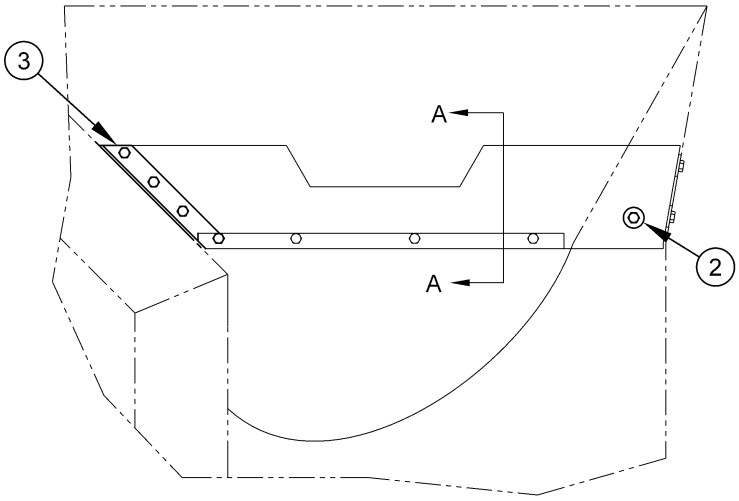
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BODY PROP SUPPORT MOUNTING KIT
272-6617

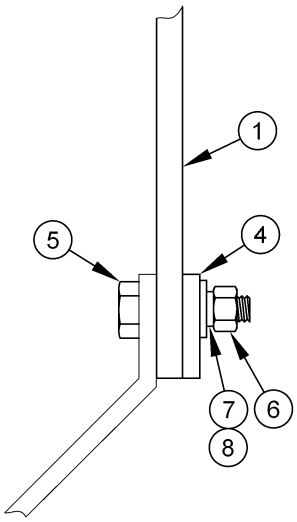
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	272-6617	KIT, Mtg., Support, Body Prop	-	REF
1	177-4835-001	SUPPORT, Body Prop	-	1
2	177-4835-002	SUPPORT, Body Prop	-	1
3	070-1172	GRIP, Control handle	-	1
4	080-1629	STOP, Body Prop, 3/4"	-	2
5	134-9021-015	GUSSET, Lower Packer, #7 Ga.	-	2
6	177-3170	CHANNEL, Stiffener, Body Prop, 2” x 1”x 3/16”	-	1
7	234-0136	PLATE, Rest, Body Prop, #7 Ga.	-	1
9	FS521300	WASHER, Flat, 5/8”, SAE, Plain	-	8
10	FS231300	NUT, Lock, 5/8”-11, Gr. 5	-	4
11	FS071334	HHCS, 5/8”-11, Gr. 5, Plated	-	4
12	234-1819	PLATE, Rest, Body Prop, 8”	-	1

Note; Item 8 is deleted.

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RUBBER MOUNTING HOPPER KIT
272-6842





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RUBBER MOUNTING HOPPER KIT
272-6842

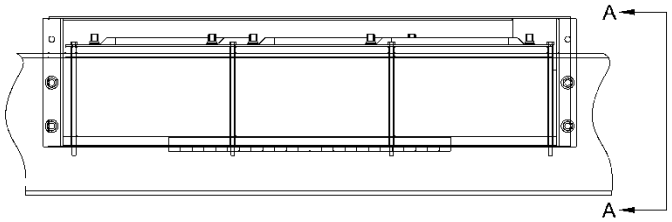
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	272-6842	KIT, Mtg., Rubber, Hopper	-	REF
1	022-3744	STRIP, Hopper, Rubber	-	1
2	055-1458	WASHER, 2”, Fender	-	9
3	211-8383	BRACKET, Mtg., Rubber, Hopper	-	1
4	211-8386	BRACKET, Back-Up, Rubber Hopper	-	1
5	FSP070924	HHCS, 3/8"-16 x 1-1/2”, Gr. 5, Plated	-	10
6	FSP260900	NUT, Hex, 3/8”	-	10
7	FSP510900	WASHER, Flat, 3/8", Std., Plated	-	4
8	FSP550900	WASHER, Lock, 3/8”, Plated	-	10

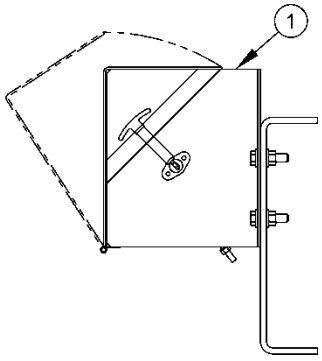
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3-BATTERY BOX MOUNT KIT

272-7844-003

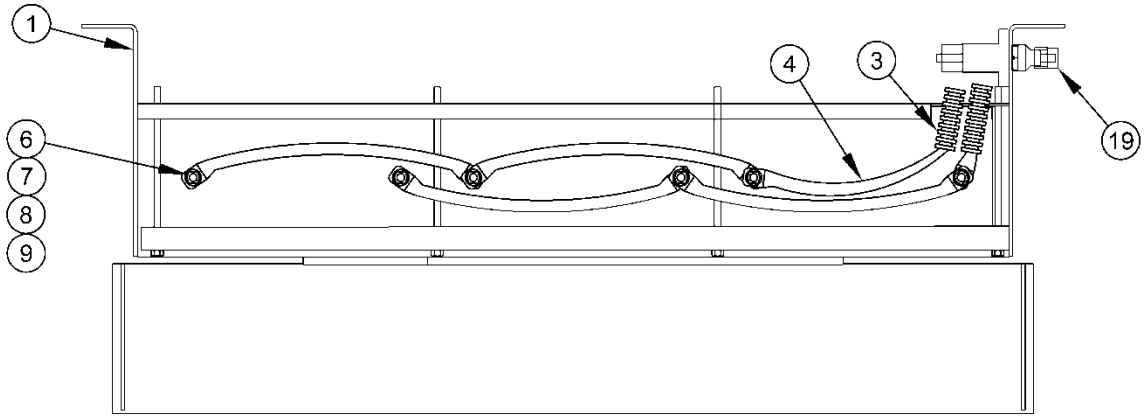




VIEW A A

3-BATTERY BOX ASSEMBLY

151-4296



3-Battery Box Assembly

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3-BATTERY BOX MOUNT KIT

272-7844-003

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	272-7844-003	KIT, Mount, 3-Battery Box	-	REF
1	151-4296	ASSEMBLY, Battery Box, 3-Battery (See Pg. 2051)	-	1
-2	FS071130	HHCS, 1/2"-13 x 2”, Gr. 5	-	4
-3	FS231110	NUT, Lock, 1/2”-13 x 7/16”, Gr. 5	-	4
-4	FS511100	WASHER, Flat, 1/2” Std., Plain	-	8
-5	701-8038	SCHEMATIC, Battery, Connection (See SM 10)	-	1

3-BATTERY BOX ASSEMBLY

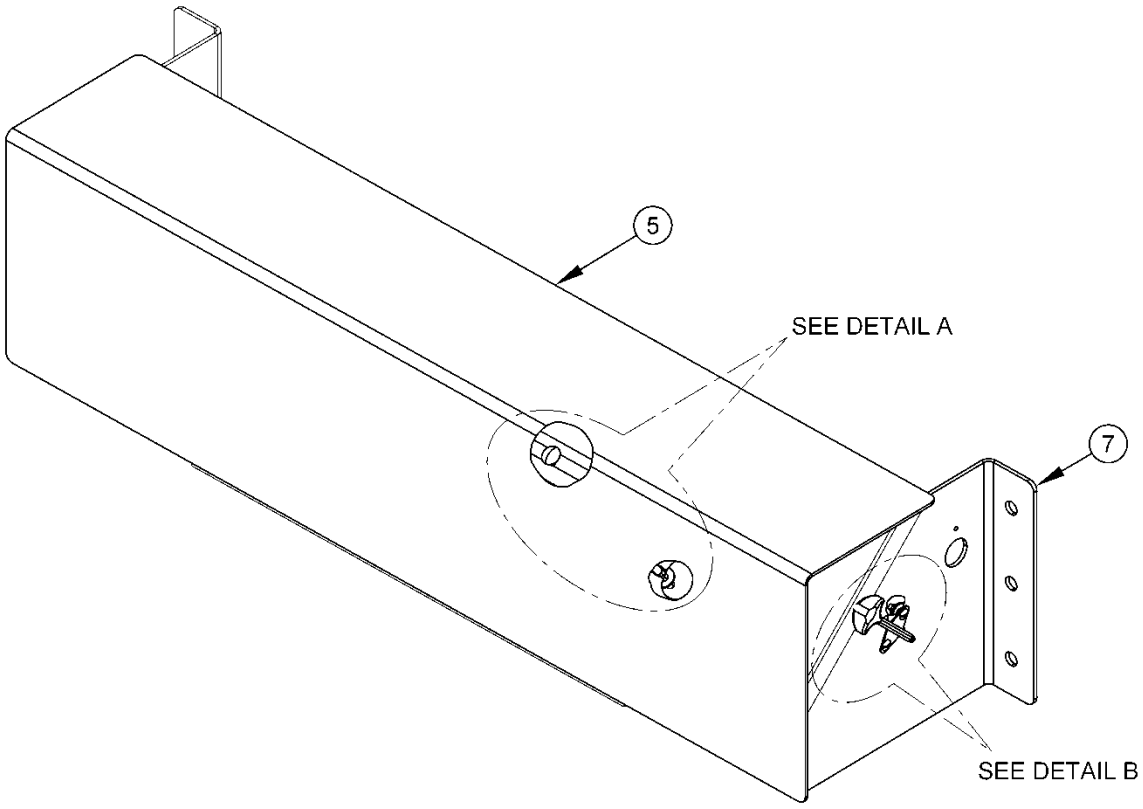
151-4296

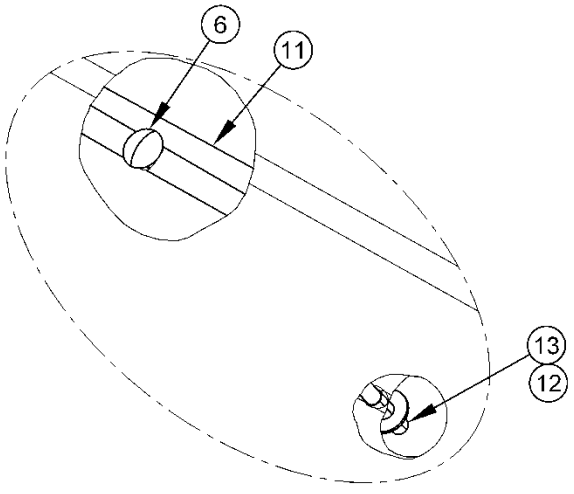
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	151-4296	ASSEMBLY, 3-Battery Box	-	REF
1	151-4644-003	WELDMENT, 3-Battery Box (See Pg. 2053)	B	1
3	108-5034-004	LOOM, Convoluted, 5/8”	-	10’
4	108-5478-301	CABLE, Battery, 3/0 Ga.	-	10’
-5	108-5478-302	UNION, Battery Cable, 3/0 Ga.	-	2
6	108-5478-304	TERMINAL, Battery, 3/0 Ga.	-	12
7	108-5478-306	TUBING, Shrink, Black, 3/0 Ga.	-	5
8	108-5478-307	TUBING, Shrink, Red, 3/0 Ga.	-	5
9	108-5707	CAPNUT, Battery Post	-	6
-15	701-8038	SCHEMATIC, Battery, Connection (See SM 10)	-	1
19	108-8123	DISCONNECT, Battery	-	1

Note: Items 2, 10-14 and 16-18 are not available.

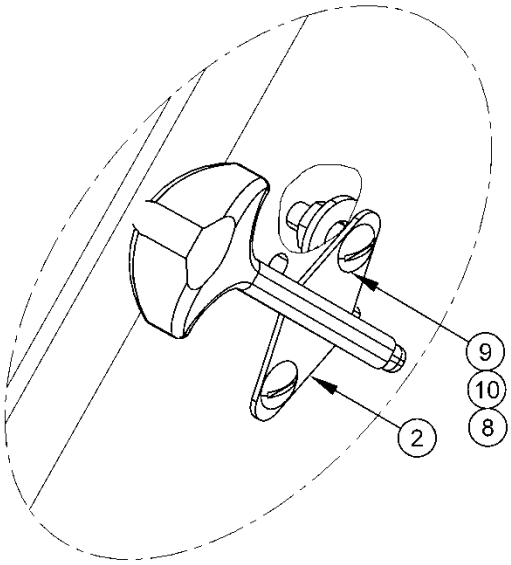
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3-BATTERY BOX WELDMENT
151-4644-003





DETAIL A



DETAIL B

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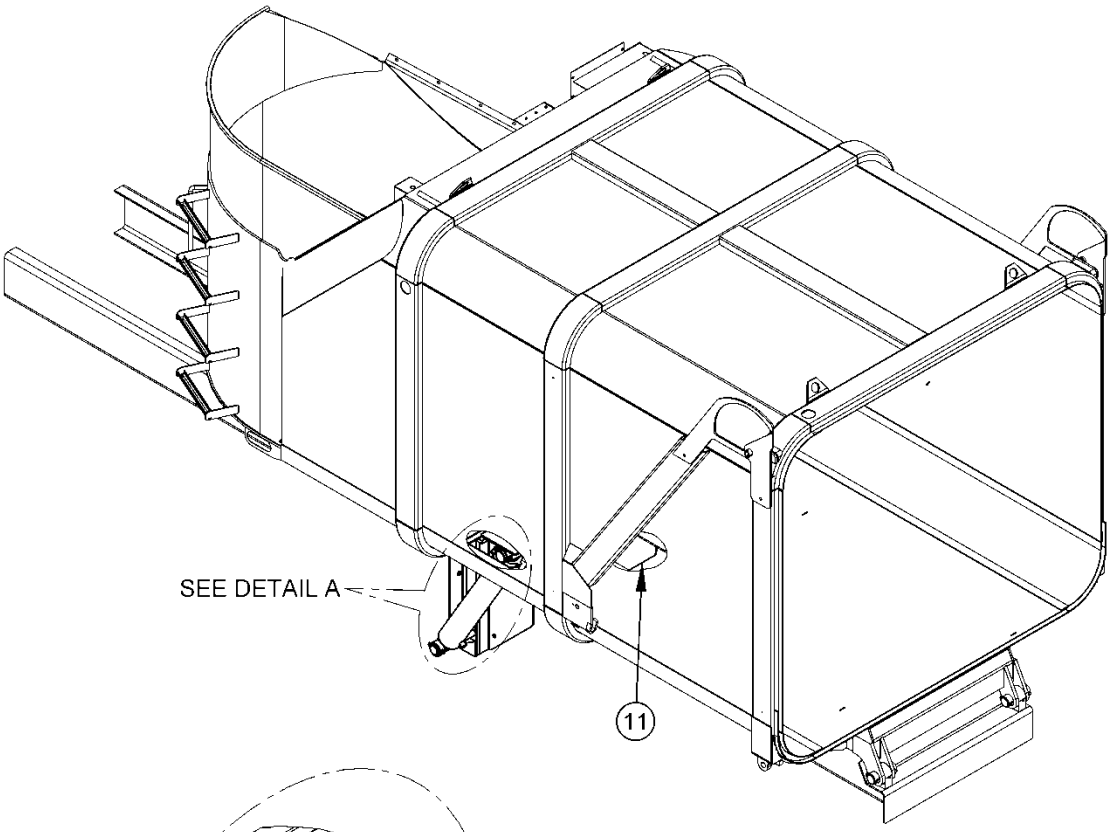
3-BATTERY BOX WELDMENT

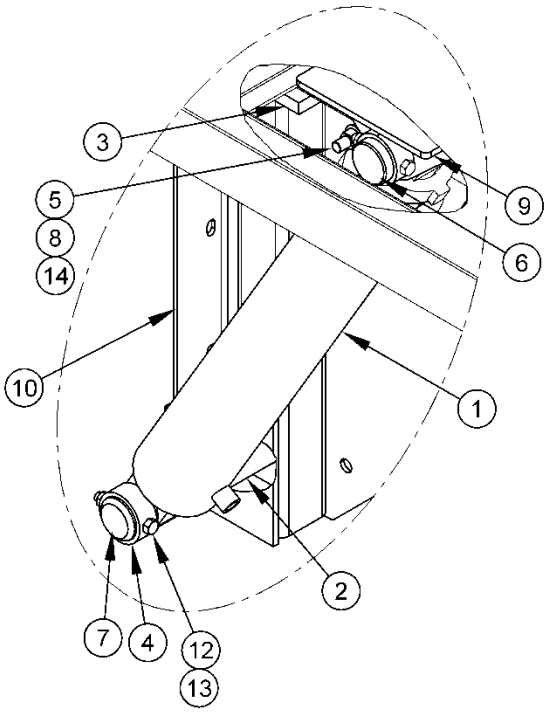
151-4644-003

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	151-4644-003	WELDMENT, Box, 3-Battery	-	REF
1	005-4115	HINGE, Battery Box	-	1
2	053-2016	LATCH, Battery Box	-	2
3	112-9948	COVER, Battery Box	-	1
4	112-9957	BRACE, Cover, Battery Box	-	2
5	112-9958	BASE, Battery Box		1
6	112-9959	ANGLE, Battery Hold down	-	1
7	113-2731	SHEET, Side, Battery box	-	2
8	FS230700	NUT, Lock, 1/4”-20, Gr. 5	-	4
9	FS410715	SCREW, 1/4” x 3/4”	-	4
10	FS510700	WASHER, Flat, 1/4”, Std., Plain	-	4
11	FSP020899	BOLT, Carriage, 5/16” x 12	-	4
12	FSP230800	NUT, Lock, 5/16”-18, Gr. 5, Plated	-	4
13	FSP520800	WASHER, Flat, 5/16”, SAE, Plain	-	4

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HOIST SADDLE KIT
272-8237





DETAIL A

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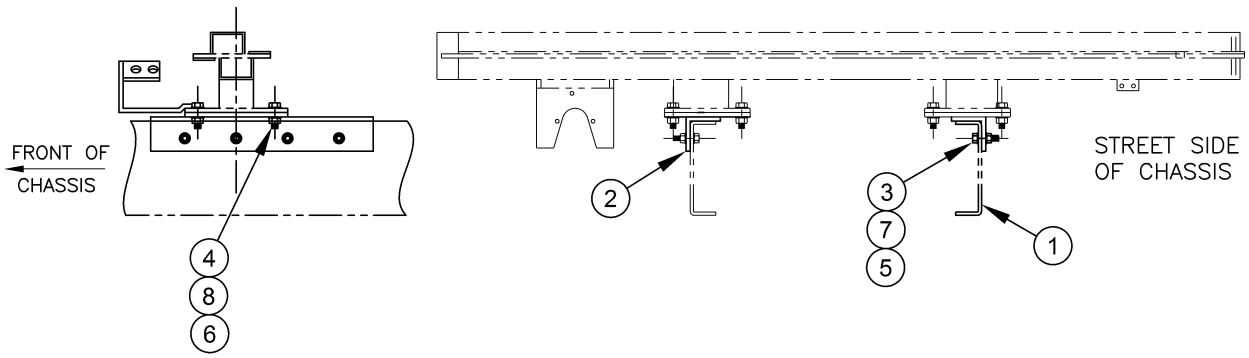
HOIST SADDLE KIT

272-8237

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	272-8237	KIT, Saddle, Hoist	-	REF
1	001-6445	CYLINDER, Body Hoist (See Section 5)	-	2
2	003-5028	BEARING, Shaft, Hoist Cylinder	-	2
3	014-1858	PAD, Mtg., 3/4" x 6”	-	2
4	040-2481	PIN, Hoist Cylinder, Collar	-	2
5	047-1796-003	BOLT, Body, Bound, 5/8”-18 x 2-1/4”, Gr. 5	-	18
6	048-5833	PIN, Hoist Cylinder, Upper	-	2
7	048-7108	PIN, Hoist Cylinder, Lower	-	1
8	055-1391-007	WASHER, Steel, Hardened, 5/8" x 0.121” Thickness, Zinc, Plated	-	36
9	311-1267	ASSEMBLY, Bracket, Rod End, Hoist (Item Welded)	-	2
10	311-2802-00L	BRACKET, Saddle, Hoist, SS	-	1
11	311-2802-00R	BRACKET, Saddle, Hoist, CS	-	1
12	FSP071146	HHCS, 1/2"-13 x 3-3/4", Gr. 5, Plated	-	6
13	FSP231100	NUT, Lock, 1/2”-13, Gr. 5, Plated	-	6
14	FSP231300	NUT, Lock, 5/8”-11, Gr. 5, Plated	-	18

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Rapid Rail® Co-Collector
LOADER MOUNT KIT
272-9662



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Rapid Rail® Co-Collector
LOADER MOUNT KIT
272-9662

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	272-9662	KIT, Mount, Loader	-	REF
1	311-0792	ASSEMBLY, Hold Down, Track (Item Welded)	-	1
2	311-2803	ASSEMBLY, Hold Down, Track, CS (Item Welded)	-	1
3	FS071334	HHCS, 5/8”-11, Gr. 5, Plated	-	8
4	FS071532	HHCS, 3/4"-10 x 2-1/2”, Gr. 5	-	10
5	FS231300	NUT, Lock, 5/8”-11, Gr. 5	-	8
6	FS231500	NUT, Lock, 3/4"-10, Gr. 5	-	10
7	FS511300	WASHER, Flat, 5/8”, Std., Plain	-	16
8	FS511500	WASHER, Flat, 3/4" Std.	-	20

Note: Item 9 is deleted.

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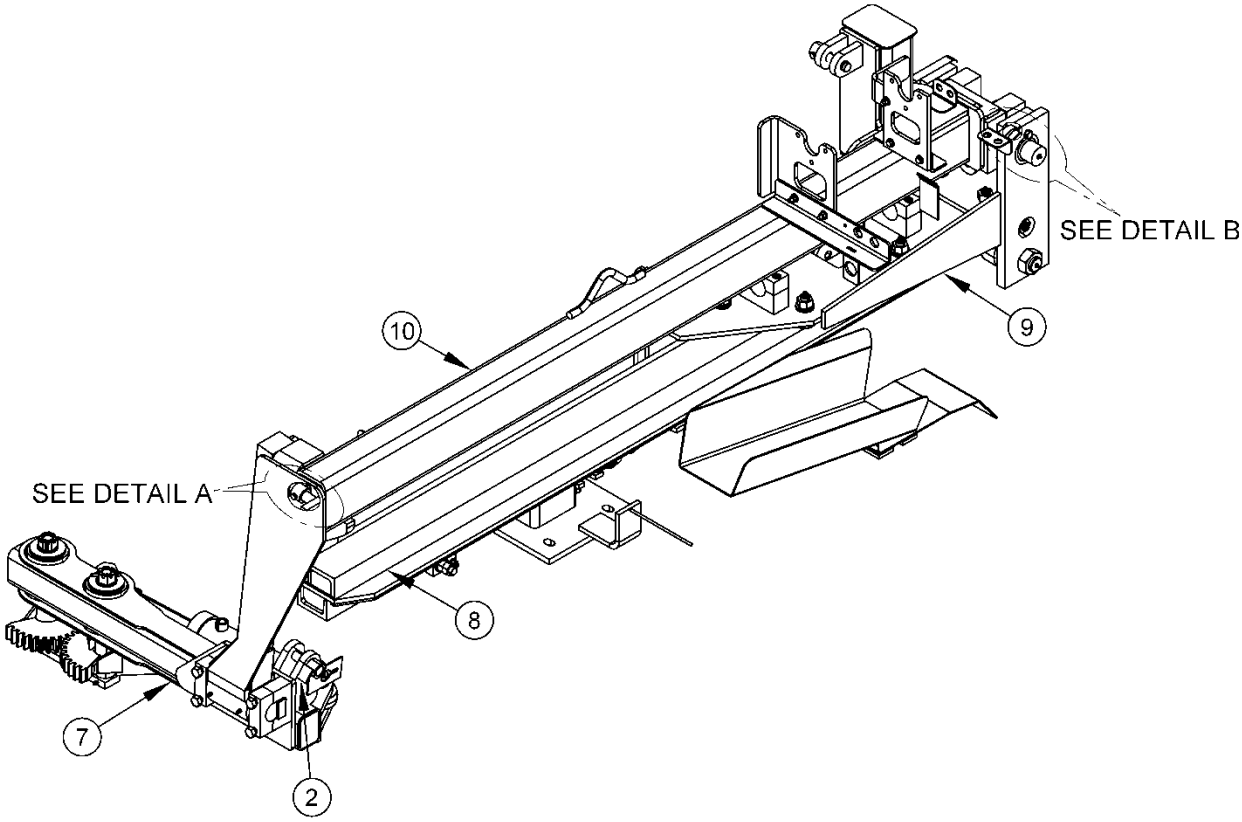
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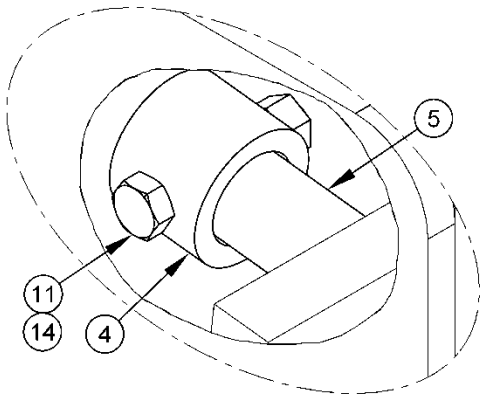
Rapid Rail® Co-Collector
HONOLULU LOADER GRABBER
372-0337

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-0337	GRABBERS, w/Loader, Honolulu	-	REF
-1	372-0346	ASSEMBLY, Loader (See Pg. 2063)	-	1
-2	556-0037	GRABBERS, 90 Gal. (See Pg. 2081)	-	1

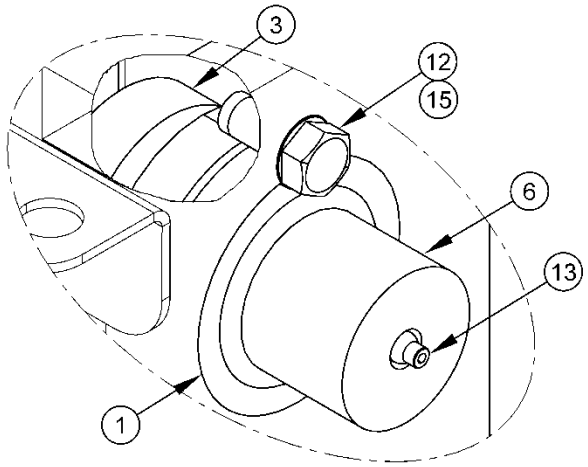
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LOADER ASSEMBLY
372-0346





DETAIL A



DETAIL B

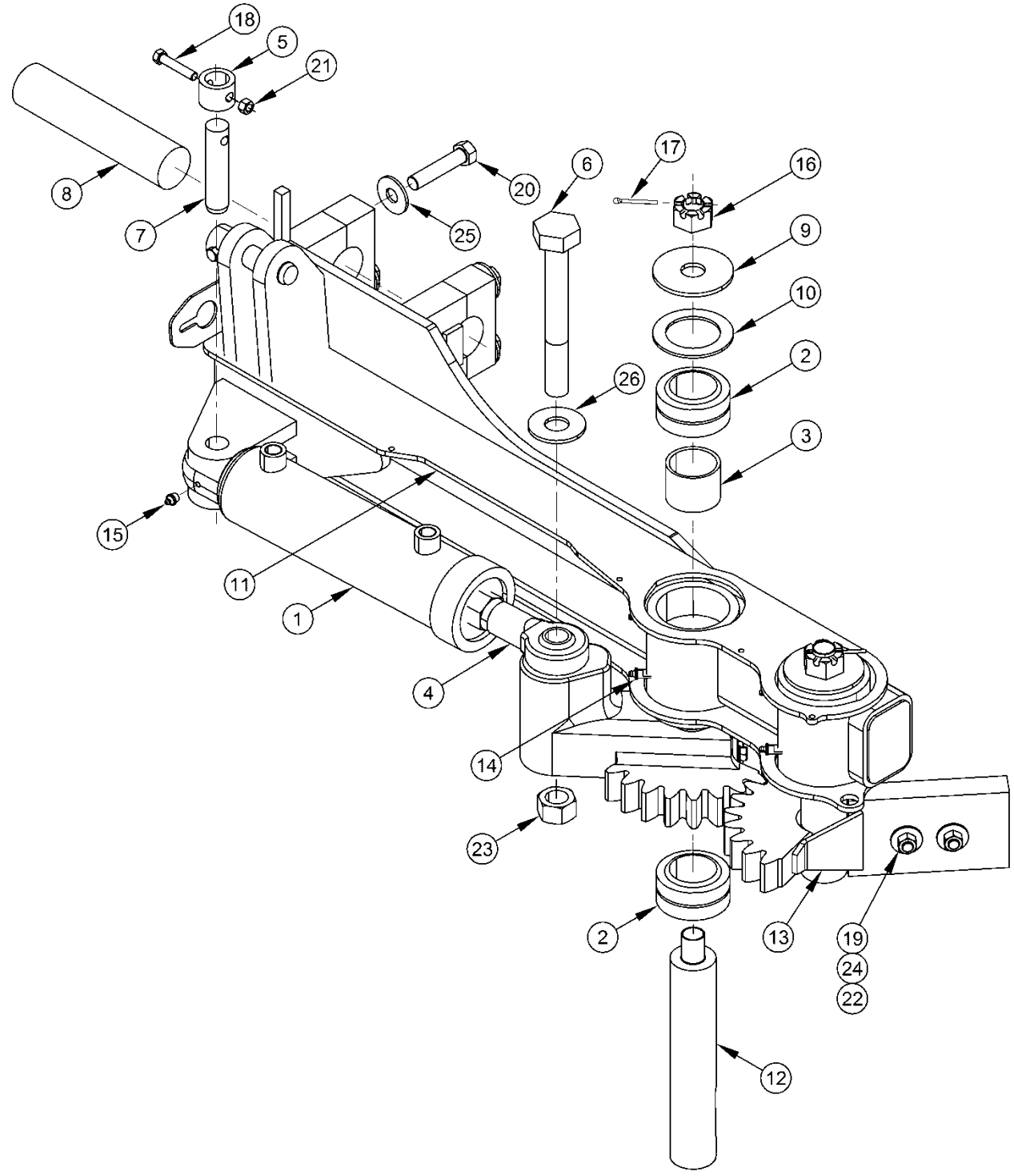
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Rapid Rail® Co-Collector
LOADER ASSEMBLY
372-0346

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-0346	ASSEMBLY, Loader	-	REF
1	003-4432	BEARING, Spherical, 2”	-	2
2	015-3030	SPACER, Tube Clamp, 3/16” x 1-1/2”	-	1
3	015-3313	SPACER, Lift Arm, Pivot Pin, 2-5/8” x 9/32”	-	2
4	040-2218	COLLAR, Retaining, 1-9/16" OD x 1/4" W	-	1
5	048-5644	PIN, Lift, 4-1/4”	-	2
6	048-5856	PIN, Arm Pivot	-	1
7	093-2739	ASSEMBLY, Arm, Dump (See Pg. 2065)	-	1
8	093-2994	ASSEMBLY, Track, Loader (See Pg. 2069)	-	1
9	272-6630	ASSEMBLY, Carriage (See Pg. 2075)	-	1
10	372-0351	ASSEMBLY, Lift Arm (See Pg. 2077)	-	1
11	FS070930	HHCS, 3/8”-16 x 2”, Gr. 5	-	2
12	FS071120	HHCS, 1/2"-13 x 1”, Gr. 5	-	2
13	FS190700	FITTING, Grease, Str., 1/4"	-	2
14	FS230900	NUT, Lock, 3/8”-16, Gr. 5	-	2
15	FS541100	WASHER, Lock, 1/2”, Plain	-	2
-16	272-8695-002	KIT, Air Line, Loader (See Pg. 2079)	-	1
-17	372-0331	KIT, Hydraulics, Loader (See Section 4)	-	1
-18	372-2654	KIT, Electrical, Loader (See Section 6)	-	1

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Rapid Rail® Co-Collector
DUMP ARM ASSEMBLY
093-2739



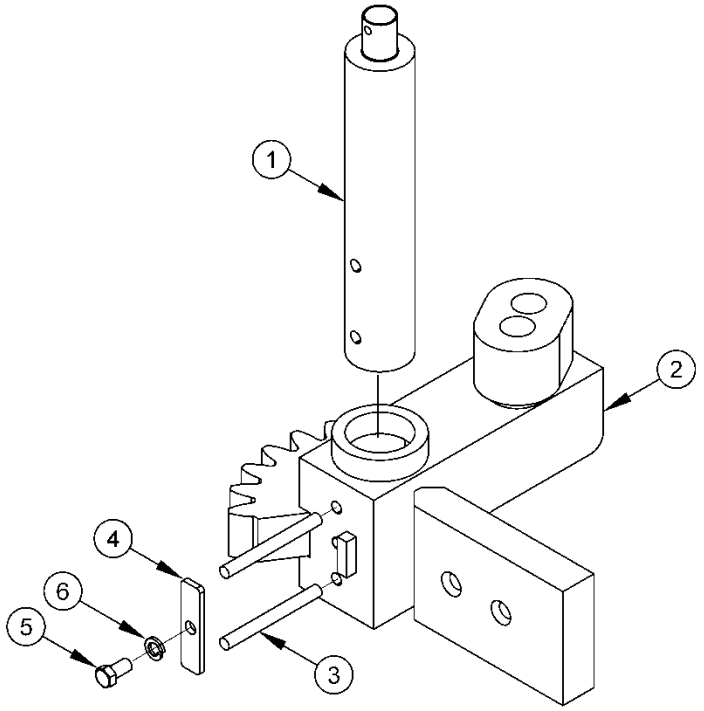
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Rapid Rail® Co-Collector
DUMP ARM ASSEMBLY
093-2739

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	093-2739	ASSEMBLY, Arm, Dump	-	REF
1	001-6829	CYLINDER, Grip (See Section 5)	-	1
2	003-4432	BEARING, Spherical, 2”	-	4
3	015-3045	SPACER, Bearings, Grip Gear	-	2
4	032-1664	END, Rod, Adjustable, 0.0-12-2A Thd.	-	1
5	040-2218	COLLAR, Retaining, 1-9/16" OD x 1/4" W	-	1
6	047-2306	HHCS, SPCL, 1”-2-3/4” x 8”, Gr. 5, Plated	-	1
7	048-5644	PIN, Lift, 4-1/4”	-	2
8	048-5857	SHAFT, Pivot, Lift Arm, 2”	-	1
9	055-1463	WASHER, Fender, 3-1/2” Dia.	-	2
10	055-1464	WASHER, Fender, 3-1/2” Dia.	-	2
11	093-2280	ARM, Machine, Detail	-	1
12	093-3227	ASSEMBLY, Drive Gear, Grabber (See Pg. 2067)	-	1
13	093-3228	WELDMENT, Gear, Idle	-	1
14	230-0049	FITTING, Grease, Extended, Str., 1/4"-28 NPT	-	4
15	FS190400	FITTING, Grease, Str., 1/8” NPT	-	REF
16	FS332000	NUT, Slotted, 1”-12	-	2
17	FS340632	PIN, Cotter, 3/16” x 2-1/4”, Steel	-	2
18	FSP070930	HHCS, 3/8”-16 x 2”, Gr. 5, Plated	-	2
19	FSP071134	HHCS, 1/2"-13 x 2-1/2”, Gr. 5, Plated	-	REF
20	FSP071340	HHCS, 5/8”-11 x 3”, Gr.5, Plated	-	4
21	FSP230900	NUT, Lock, 3/8”-16, Gr. 5, Plated	-	2
22	FSP231100	NUT, Lock, 1/2”-13, Gr. 5, Plated	-	REF
23	FSP242000	NUT, Lock, 1-8”, Gr. 5, Plated	-	1
24	FSP511100	WASHER, Flat, 1/2" Std., Plated	-	REF
25	FSP511300	WASHER, Flat, 5/8” Std., Plated	-	4
26	FSP512000	WASHER, Flat, 1” Std., Plated	-	1

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GRABBER DRIVE GEAR ASSEMBLY
093-3227



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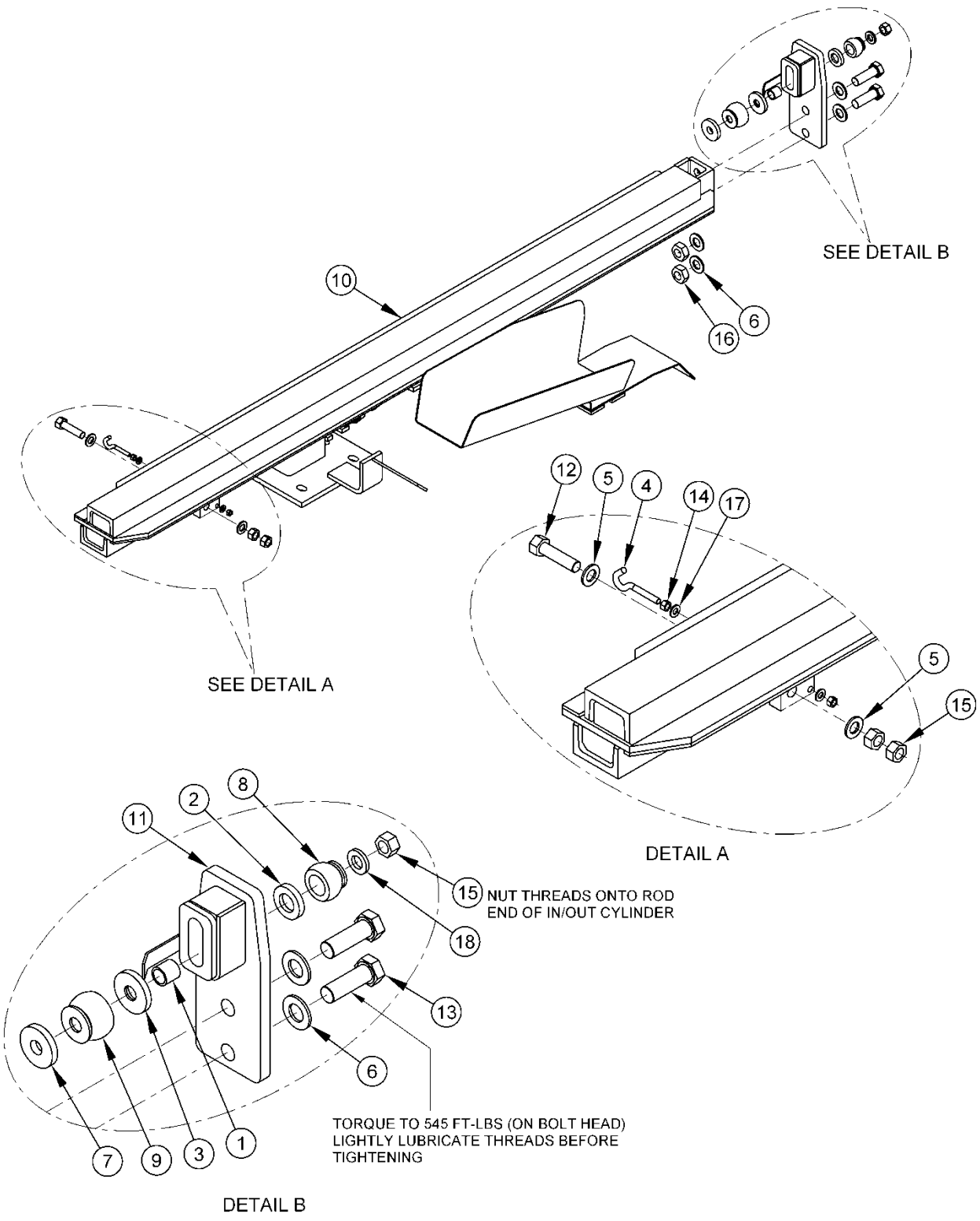
GRABBER DRIVE GEAR ASSEMBLY

093-3227

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	093-3227	ASSEMBLY, Drive Gear, Grabber	-	REF
1	008-9022-001	SHAFT, Arm, Grip, 2” Dia.	-	1
2	093-3172	WELDMENT, Grip, Drive Gear	-	1
3	093-3227-001	PIN, Shaft, Drive Gear, 3-3/4” x 0.375” Dia.	-	2
4	093-3227-002	PLATE, Cover, Pins, Drive Gear Assembly, 3”	-	1
5	FSP100915	HHCS, 3/8”-24 x 3/4”, Gr. 5, Plated	-	1
6	FSP540900	WASHER, Lock, 3/8”, Plain	-	1

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Rapid Rail® Co-Collector
LOADER TRACK ASSEMBLY
093-2994



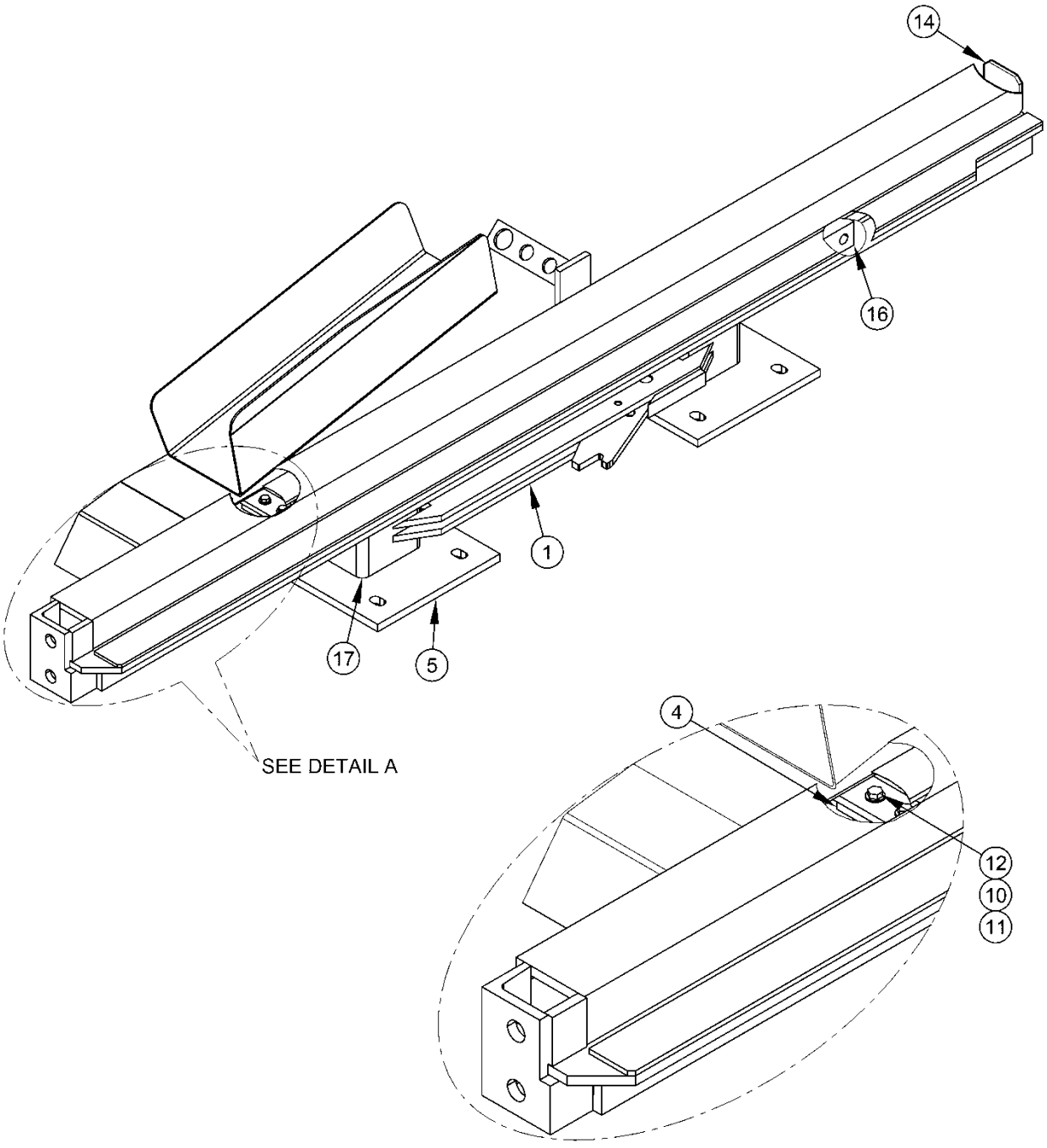
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Rapid Rail® Co-Collector
LOADER TRACK ASSEMBLY
093-2994

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	093-2994	ASSEMBLY, Track, Loader	-	REF
1	003-4566	BEARING, Plane, 1.125”	-	1
2	015-2918	BEARING, Holder, 2”	-	1
3	015-3043	BEARING, Holder, 2-1/2”	-	1
4	047-2542	BOLT, Hook, 3/8”-16 x 4”	-	1
5	055-1391-008	WASHER, Steel, Hardened, 3/4” x 0.16” Thickness, Zinc, Plated	-	2
6	055-1391-010	WASHER, Steel, Hardened, 1" x 0.160” Thickness, Zinc, Plated	-	4
7	055-1454	WASHER, In/Out Cylinder, 2-1/2”	-	1
8	080-1905	CUSHION, Bumper, Mach.	-	1
9	080-1906	CUSHIONER, Mach. Cylinder	-	1
10	093-2740	ASSEMBLY, Track (See Pg. 2071)	-	1
11	177-5205	BRACKET, Mount, In/Out Cylinder (Item Welded)	-	1
12	FS071540	HHCS, 3/4"-10 x 3”, Gr. 5	-	1
13	FS082040	HHCS, 1-8” x 3”, Gr. 8	-	2
14	FS230900	NUT, Lock, 3/8”-16, Gr. 5	-	2
15	FS231500	NUT, Lock, 3/4"-10, Gr. 5	-	3
16	FS322000	NUT, Lock, 1-8”, Gr. 8	-	2
17	FS510900	WASHER, Flat, 3/8”, Std., Plain	-	2
18	FS511500	WASHER, Flat, 3/4" Std.	-	1
-19	L4P-11	CHAIN, 5/16” x 24”	-	1

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TRACK ASSEMBLY
093-2740



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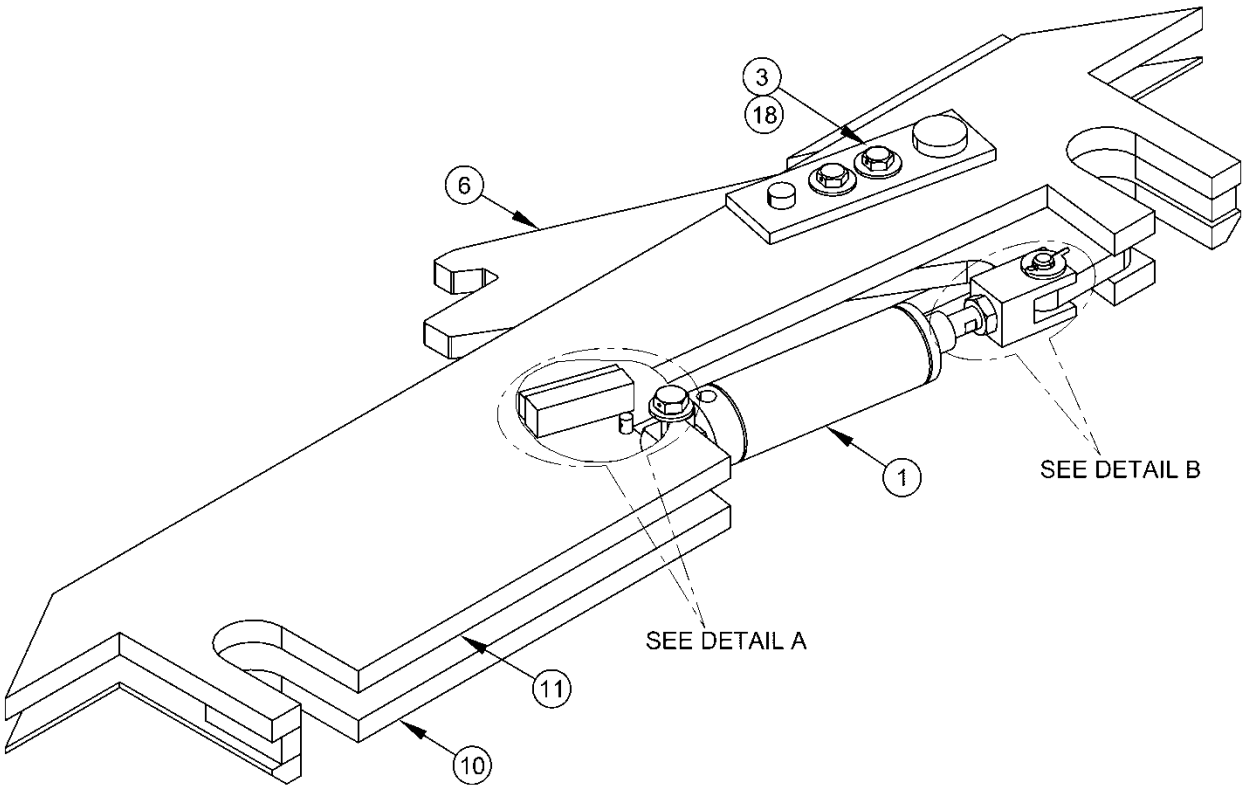
Rapid Rail® Co-Collector
TRACK ASSEMBLY
093-2740

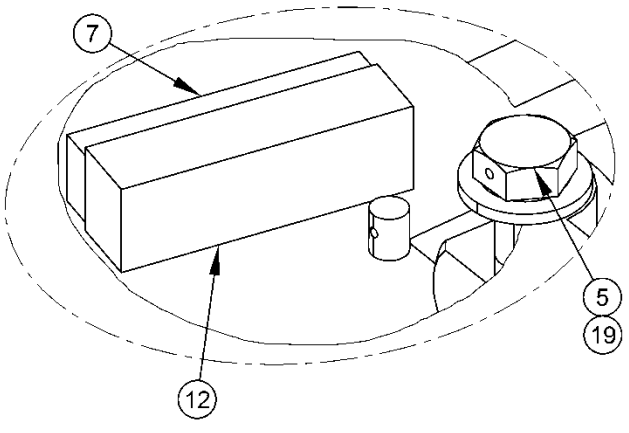
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	093-2740	ASSEMBLY, Track	-	REF
1	053-2025	ASSEMBLY, Latch (See Pg. 2073)	-	1
4	211-8388	TRAY, Loader, Mtg. Bracket	-	2
5	234-1154	PLATE, Track Leg	-	2
10	FS070923	HHCS, 3/8”-16 x 1-3/8”, Gr. 5	-	4
11	FS230900	NUT, Lock, 3/8”-16, Gr. 5	-	4
12	FS510900	WASHER, Flat, 3/8”, Std., Plain	-	8
14	L11-4	END, Plate, Channel	-	4
16	L19-6	STOP, Carriage	-	1
17	L19-7	TUBING, Riser, 6” x 4” x 3/8” W, Steel	-	2

Note: Items 2, 3, 6-9, 13 and 15 are welded.

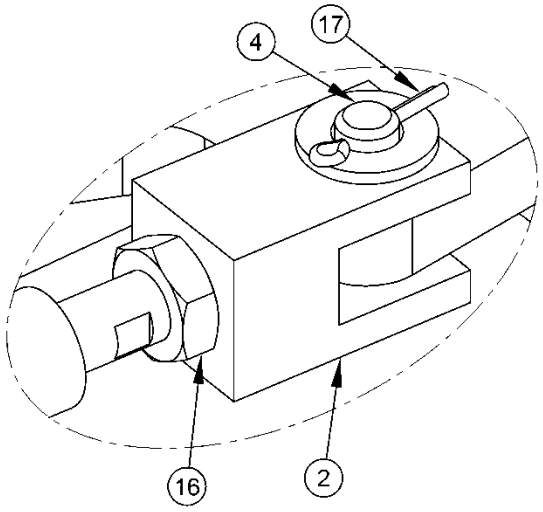
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LOADER TRACK ASSEMBLY
053-2025





DETAIL A



DETAIL B

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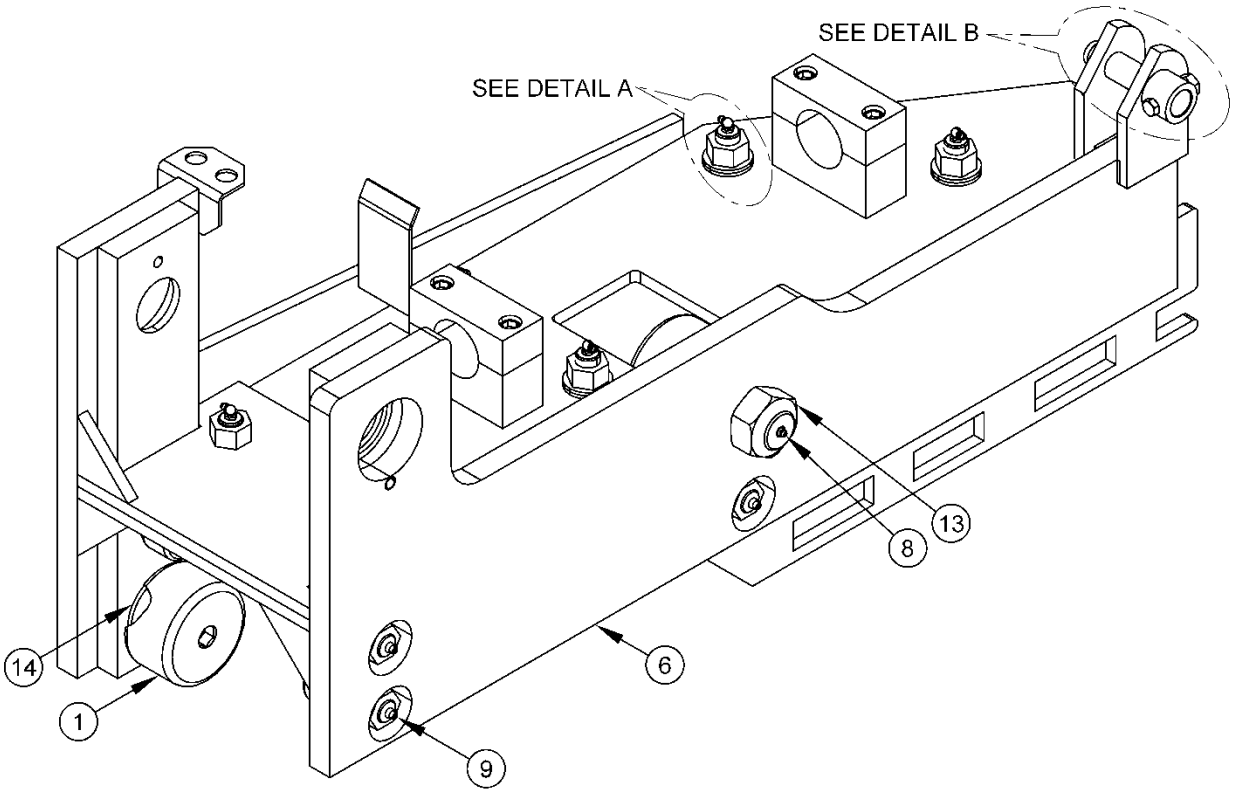
Rapid Rail® Co-Collector
LOADER TRACK ASSEMBLY
053-2025

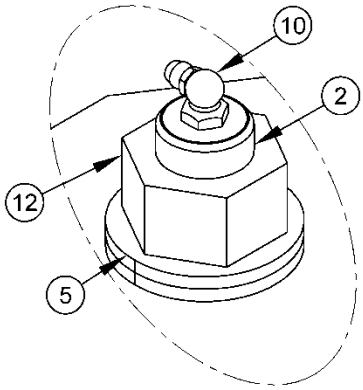
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	053-2025	ASSEMBLY, Latch	-	REF
1	001-6393	CYLINDER, Air, 1-1/2” Bore x 2” Stroke (See Section 5)	-	1
2	032-1548	END, Yoke, Latch, Mechanical	-	1
3	047-2313	BOLT, An Grade	-	2
4	047-3127-012	PIN, Clevis, 3/32” x 3/4”, 3/8”, Plated	-	1
5	048-6037	PIN, Cylinder, Mtg., Latch Mechanical	-	1
6	053-2027	ASSEMBLY, Hook	-	1
7	080-1646	STOP, Rubber, 1/4"	-	1
-8	097-0512-006	WIRE, Safety, S/S, 6”	-	2
10	234-0137	PLATE, Top, Latch, Mechanical, 1/2"	-	1
11	234-0138	PLATE, Bottom, Latch, Mechanical, 1/2"	-	1
12	234-0140	STOP, Inner, 1/2" x 2	-	3
16	FS301000	NUT, Jam, 7/16”-14	-	1
17	FS340212	PIN, Cotter, 3/32” x 9/16”, Steel	-	1
18	FS520800	WASHER, Flat, 5/16”, SAE, Plain	-	2
19	FS520900	WASHER, Flat, 3/8” SAE, Plain	-	2

Note: Items 9 and 13-15 are welded.

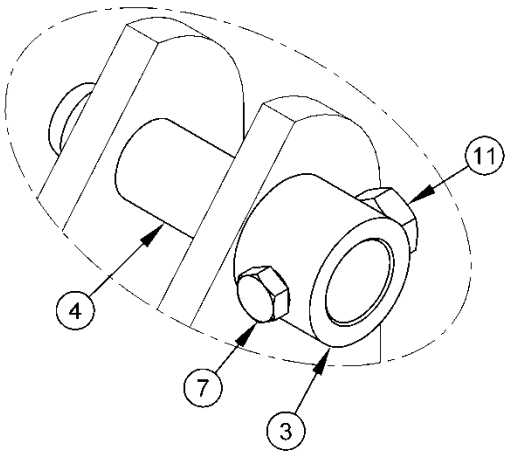
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CARRIAGE ASSEMBLY
272-6630





DETAIL A



DETAIL B

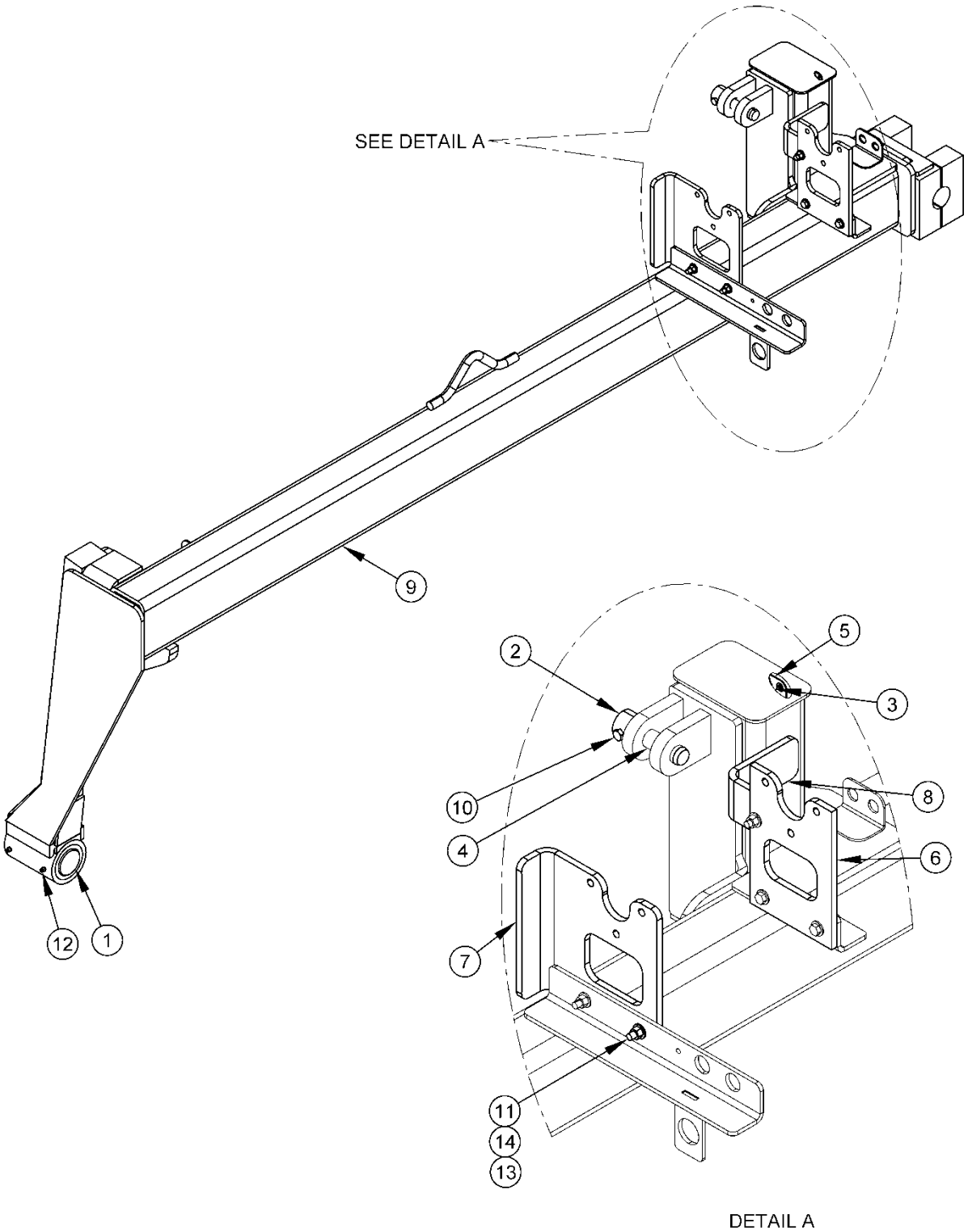
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CARRIAGE ASSEMBLY
272-6630

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	272-6630	ASSEMBLY, Carriage	-	REF
1	003-4449	CAM, Follower, 4” Dia.	-	2
2	003-4450	CAM, Follower, 2” Dia.	-	10
3	040-2218	COLLAR, Retaining, 1-9/16" OD x 1/4" W	-	1
4	048-5644	PIN, Lift, 4-1/4”	-	1
5	055-1391-009	WASHER, Steel, Hardened, 7/8" x 0.160” Thickness, Zinc, Plated	-	18
6	237-5503	WELDMENT, Carriage, Loader	-	1
7	FS070930	HHCS, 3/8”-16 x 2”, Gr. 5	-	1
8	FS190400	FITTING, Grease, Str., 1/8” NPT	-	2
9	FS190700	FITTING, Grease, Str., 1/4"	-	4
10	FS190790	FITTING, Grease, 90°, 1/4"-28	-	6
11	FS230900	NUT, Lock, 3/8”-16, Gr. 5	-	1
12	FS251700	NUT, Hex, 7/8”-14, Plated	-	10
13	FS252400	NUT, Hex, 1-1/2”, Plated	-	2
14	FS512400	WASHER, Flat, 1-1/2” Std., Plain	-	2

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Rapid Rail® Co-Collector
LIFT ARM ASSEMBLY
372-0351



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Rapid Rail® Co-Collector
LIFT ARM ASSEMBLY
372-0351

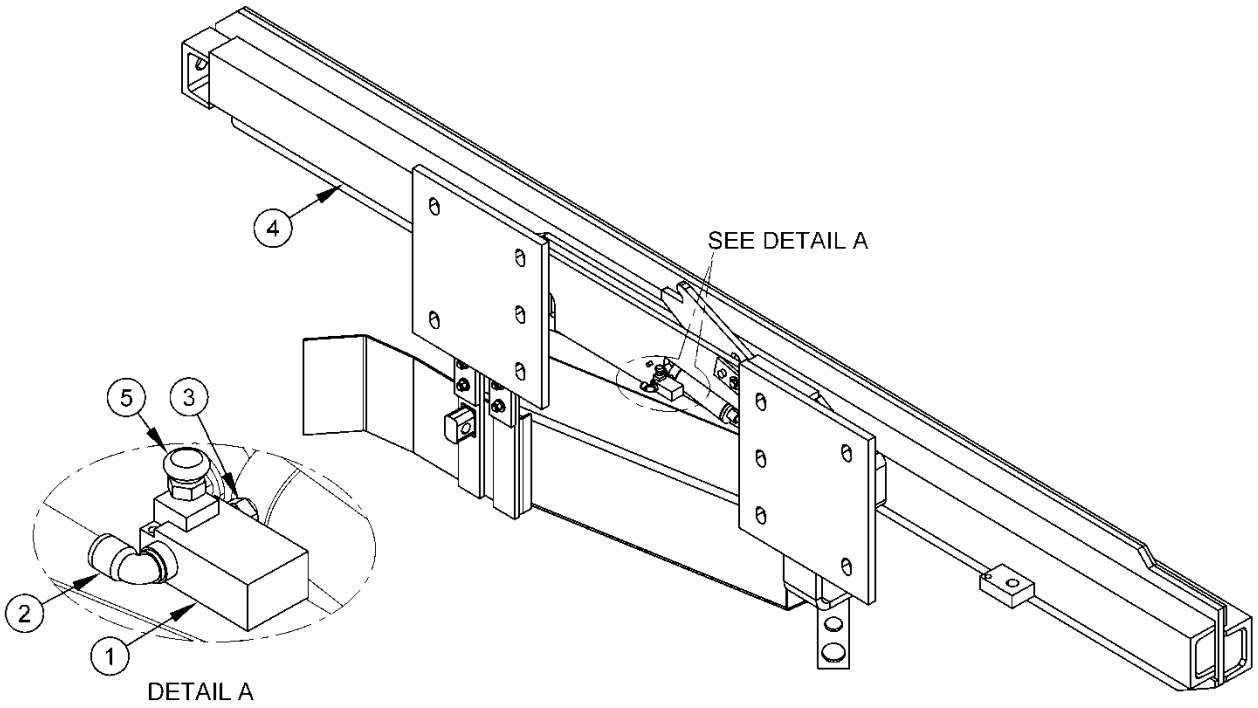
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-0351	ASSEMBLY, Lift Arm	-	REF
1	003-4432	BEARING, Spherical, 2”	-	2
2	040-2218	COLLAR, Retaining, 1-9/16" OD x 1/4" W	-	1
3	047-2147	TRACK, Metal, 1/4"	-	4
4	048-5644	PIN, Lift, 4-1/4”	-	1
5	212-1882	PLATE, Serial No.	-	1
6	311-1598	PLATE, Valve Mtg.	-	1
7	311-1598-001	BRACKET, Valve Mount, Loader, 3/8”	-	1
8	311-3975	BRACKET, Valve Brace, Loader	-	1
9	372-1843	WELDMENT, Lift Arm, Modified Tube	-	1
10	FS070930	HHCS, 3/8”-16 x 2”, Gr. 5	-	1
11	FS080924	HHCS, 3/8"-16 x 1-1/2”, Gr. 8	-	5
12	FS190700	FITTING, Grease, Str., 1/4"-28	-	2
13	FS230900	NUT, Lock, 3/8”-16, Gr. 5	-	6
14	FS520900	WASHER, Flat, 3/8” SAE, Plain	-	10

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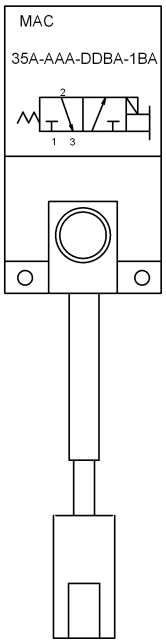
LOADER AIR LINE KIT

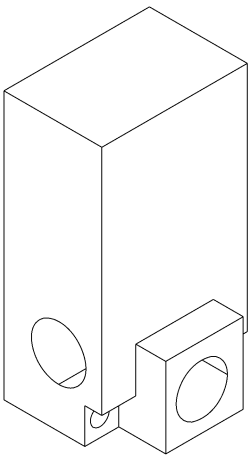
272-8695-002



DEUTSCH 12 V AIR VALVE

031-6087-012





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LOADER AIR LINE KIT

272-8695-002

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	272-8695-002	KIT, Air Line, Loader	-	REF
1	031-6087-012	VALVE, Air, 12 V, Deutsch (See Pg. 2079)	-	1
2	054-8470-003	ELBOW, Air Line Connection, 1/8” NPT-1/4”	-	1
3	054-8927-001	NIPPLE, Hex, Brass, 1/8”	-	1
4	093-2740	ASSEMBLY, Track (See Pg. 2071)	-	REF
5	108-5354-006	BREATHER, 1/8” NPT	-	1
-6	054-5449	TUBING, Air Line, 1/4", Nylon	-	10’
-7	108-5034-001	LOOM, Electrical, Split Convoluted, Plastic, 1/4”	-	10’

DEUTSCH 12 V AIR VALVE

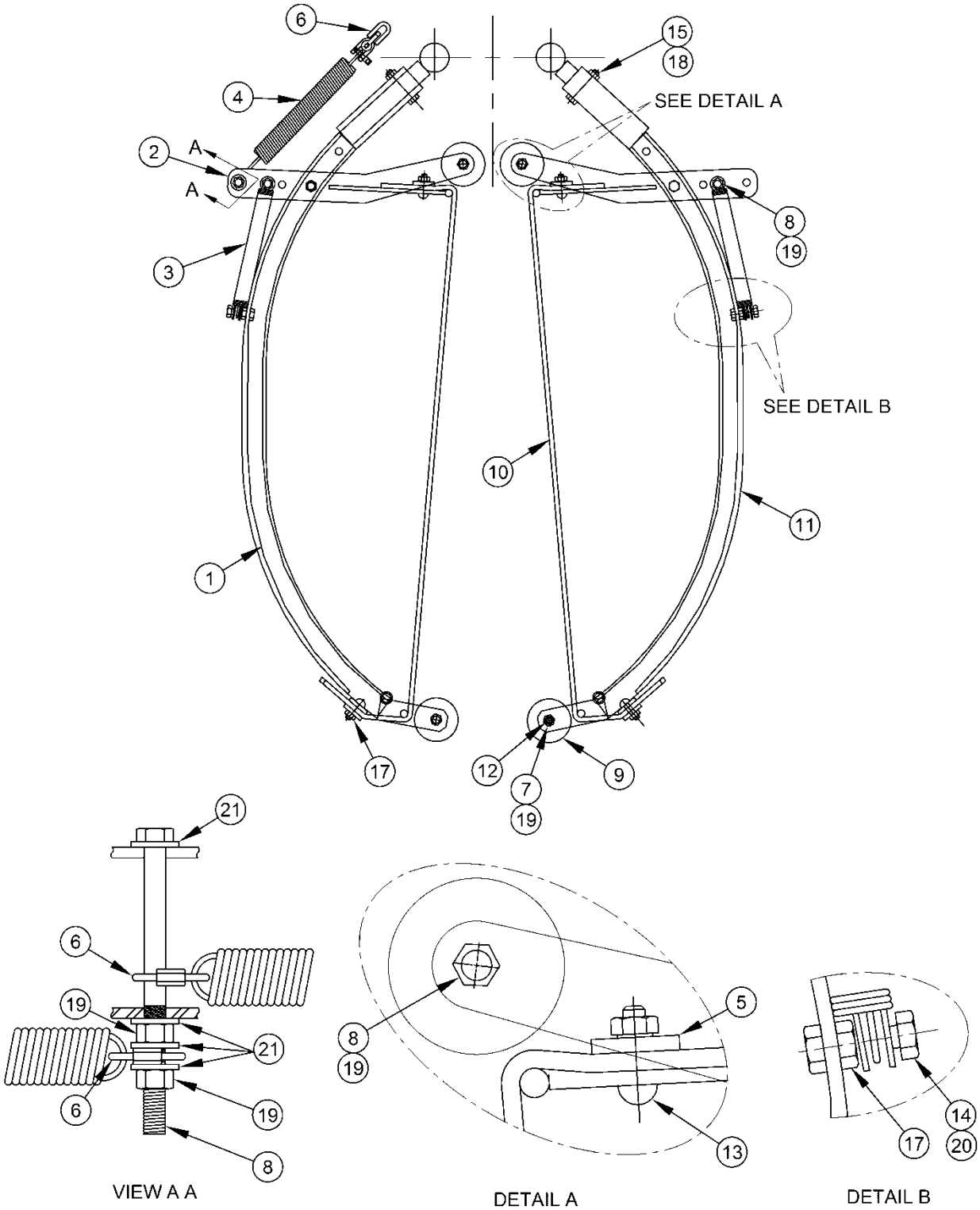
031-6087-012

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	031-6087-012	VALVE, Air, 12 V, Deutsch	-	REF
-1	031-5724-012	SOLENOID, Air	-	1
-3	108-6461-011	PLUG, Str., 2 Way, Deutsch DT Series	-	1
-6	108-5034-001	LOOM, Electrical, Split Convoluted, Plastic, 1/4”	-	2

Note: Items 2, 4 and 5 are not available.

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Rapid Rail® Co-Collector
90 GALLONS GRABBER
556-0037



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Rapid Rail® Co-Collector
90 GALLONS GRABBER
556-0037

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	556-0037	GRABBERS, 90 Gal.	-	REF
1	093-2298	WELDMENT, Arm, 90 Gal., Honolulu	-	2
2	093-2397	ARM, Inner	-	2
3	019-1404	SPRING, Extension, Hugger Grabber	-	2
4	019-1392	SPRING, Belt Grabbers, 60/400 Gal	-	2
5	036-1636	PLATE, Belt Clamp, Universal Grabber	-	4
6	043-0803	SHACKLE, Chain	-	12
7	047-2314-001	BOLT, HH, 1/2” x 5-1/2”, Gr.5, Zinc Plated	-	2
8	047-2314-003	BOLT, HH, 1/2” x 6”, Gr. 5, Zinc Plated	-	6
9	062-0712	ROLLER, Grabber, 4”	-	4
10	071-0843	BELT, Arm, 47”	-	2
11	093-2426	CHANNEL, Arm, Reinforcement, 1/2" x 3-1/2” x 53.94”	-	2
12	L23-14	BUSHING	-	4
13	FSP020922	BOLTS, Carriage, 3/8” x 1-1/4”, Plated	-	4
14	FSP020926	BOLTS, Carriage, 3/8” x 1-3/4”, Plated	-	2
15	FSP071044	HHCS, 7/16”-14 x 3-1/2”, Gr. 5, Plated	-	2
-16	FSP071190	HHCS, 1/2"-13 x 8”, Gr. 5, Plated	-	2
17	FSP230900	NUT, Lock, 3/8”-16, Gr. 5, Plated	-	4
18	FSP231000	NUT, Lock, 7/16”-14, Gr. 5, Plated	-	2
19	FSP231100	NUT, Lock, 1/2”-13, Gr. 5, Plated	-	12
20	FSP281100	NUT, Hex, 1/2"-13, Plain	-	2
21	FSP511100	WASHER, Flat, 1/2" Std., Plated	-	8
-22	FSP521100	WASHER, Flat, 1/2", SAE, Plated	-	4

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Rapid Rail® Co-Collector

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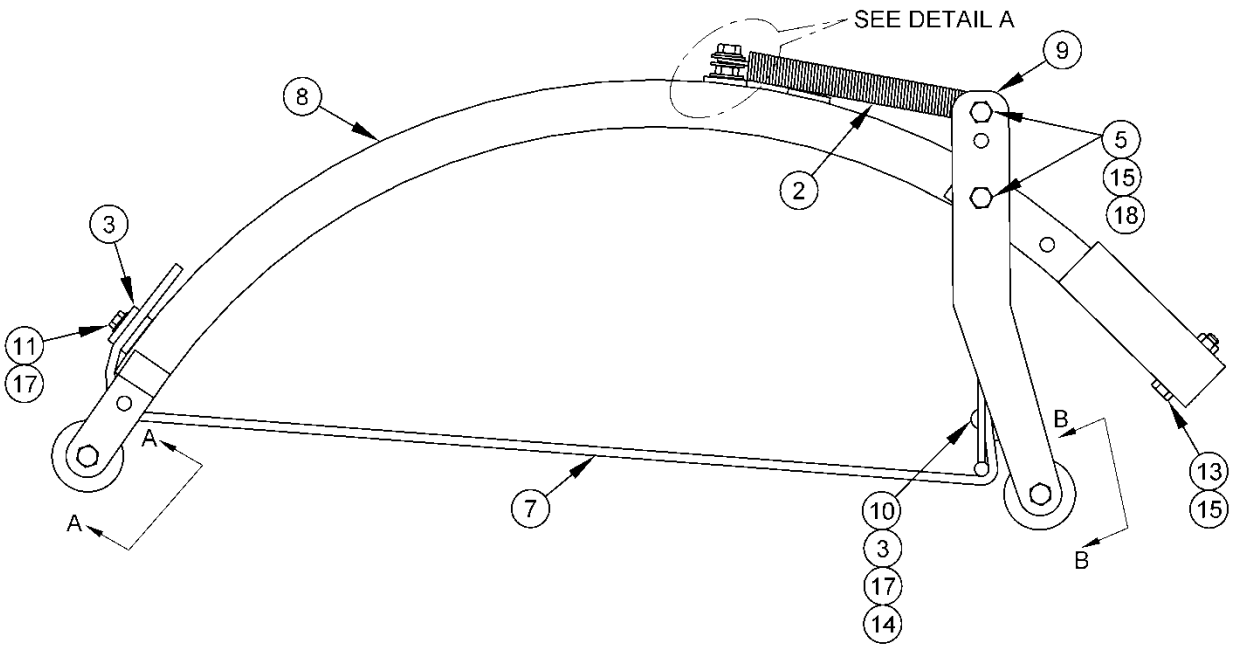
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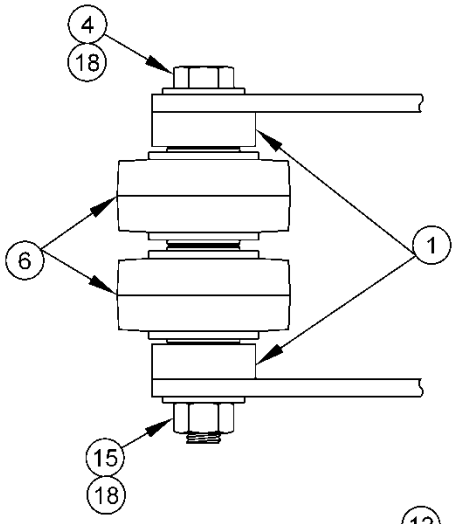
Rapid Rail® Co-Collector
LOADER WITH ANAHEIM GRABBERS
372-0338

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-0338	GRABBERS, Anaheim w/Loader	-	REF
-1	093-2419	ASSEMBLY, Arm, Anaheim, 60/90 Gal. (See Pg. 2085)	-	2
-2	372-0346	ASSEMBLY, Loader (See Pg. 2063)	-	1

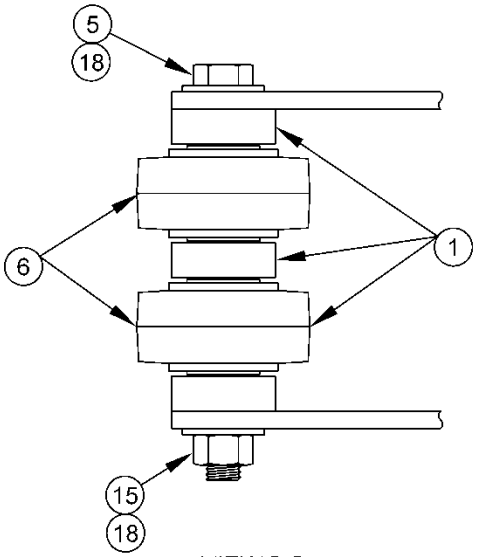
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Rapid Rail® Co-Collector
60/90 GALLON ANAHEIM ARM ASSEMBLY
093-2419

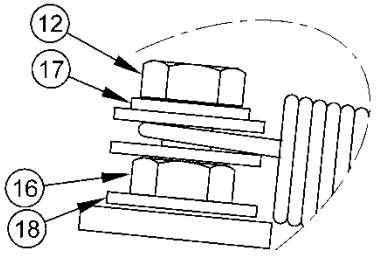




VIEW A A



VIEW B B



DETAIL A

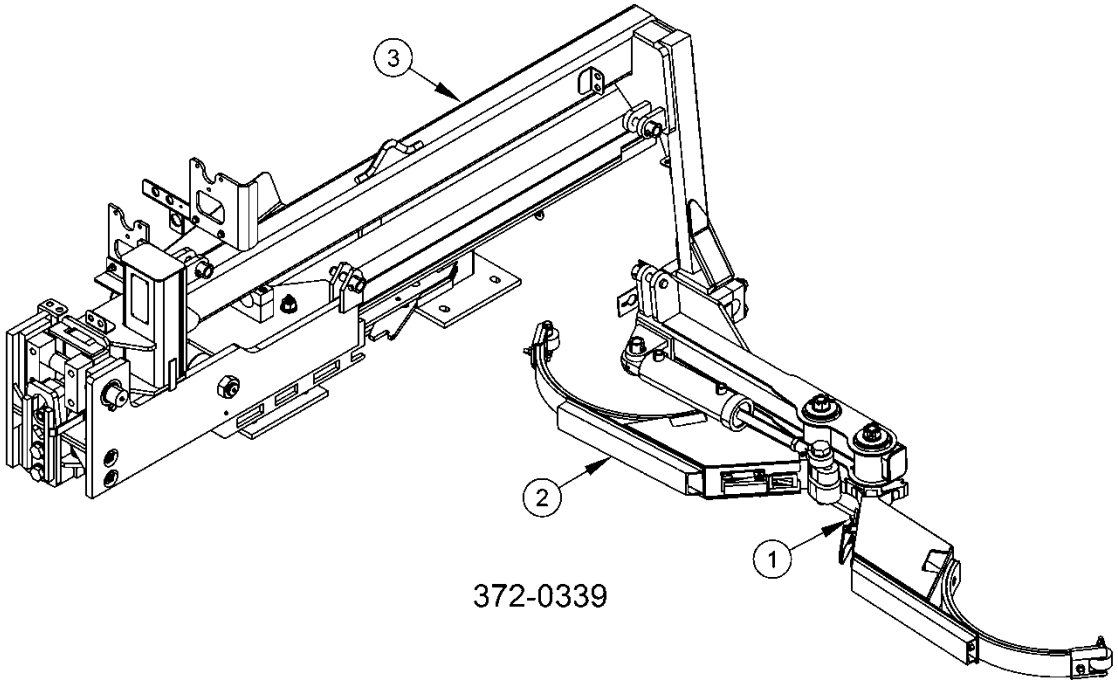
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Rapid Rail® Co-Collector
60/90 GALLON ANAHEIM ARM ASSEMBLY
093-2419

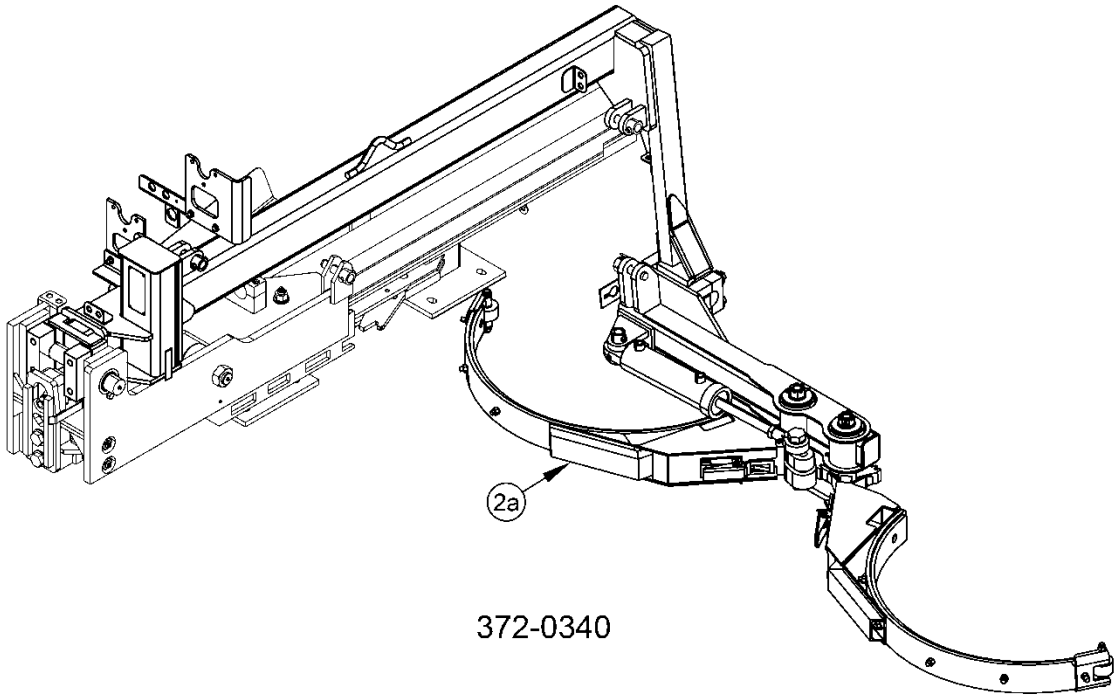
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	093-2419	ASSEMBLY, Arm, Anaheim, 60/90 Gal.	-	REF
1	015-2928	SPACER, Roller, 1-1/2” Dia.	-	5
2	019-1404	SPRING, Grabber, Hugger Extension	-	1
3	036-1636	PLATE, Belt Clamp, Universal Grabber	-	2
4	047-2314-001	BOLT, HH, 1/2” x 5-1/2”, Gr.5, Zinc Plated	-	1
5	047-2314-003	BOLT, HH, 1/2” x 6”, Gr. 5, Zinc Plated	-	3
6	062-0717	ROLLER, 2-1/2” Dia.	-	4
7	071-0843	BELT, Arm, 47”	-	1
8	093-2418	WELDMENT, Arm, 60/90 Gal.	-	1
9	093-2420	ARM, Inner, Anaheim	-	1
10	FSP020924	BOLT, Carriage, 3/8”-16 x 1-1/2”, Plated	-	1
11	FSP070924	HHCS, 3/8"-16 x 1-1/2”, Gr. 5, Plated	-	1
12	FSP070930	HHCS, 3/8”-16 x 2”, Gr. 5, Plated	-	1
13	FSP071134	HHCS, 1/2"-13 x 2-1/2”, Gr. 5, Plated	-	1
14	FSP230900	NUT, Lock, 3/8”-16, Gr. 5, Plated	-	1
15	FSP231100	NUT, Lock, 1/2”-13, Gr. 5, Plated	-	5
16	FSP241100	NUT, Lock, 1/2”-20, Gr. 5, Plated	-	1
17	FSP510900	WASHER, Flat, 3/8", Std., Plated	-	3
18	FSP521100	WASHER, Flat, 1/2", SAE, Plated	-	11

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Rapid Rail® Co-Collector
90/300 LOADER SPRING GRABBERS
372-0339, 372-0340



372-0339



372-0340

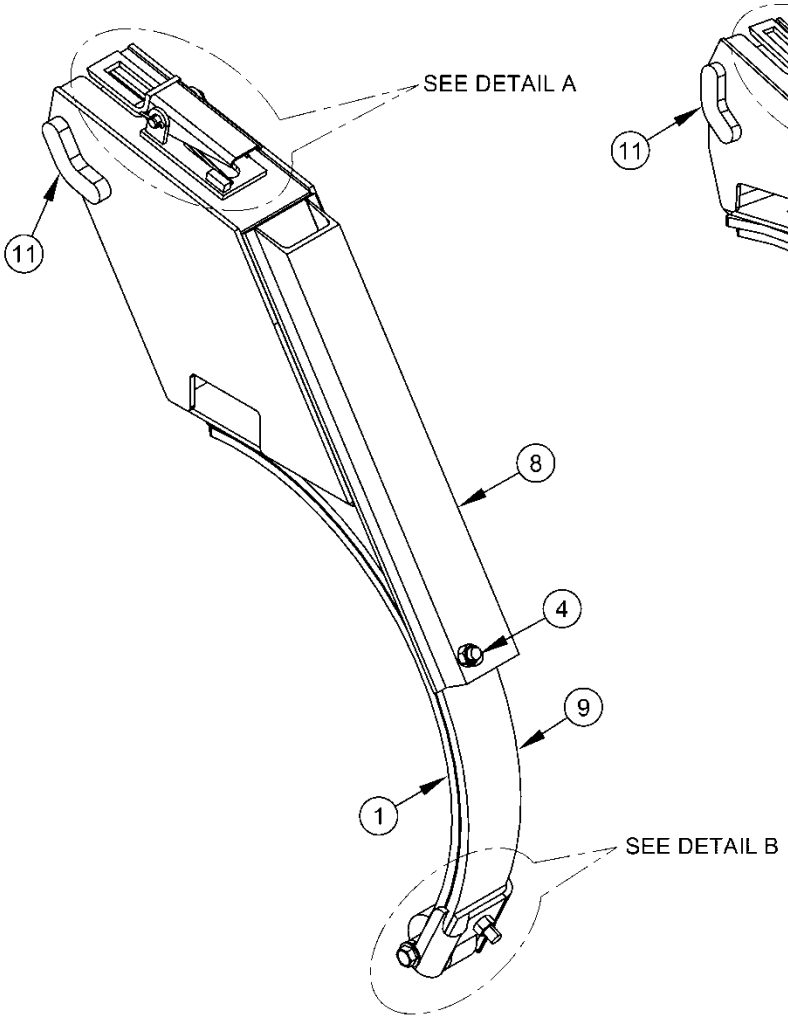
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Rapid Rail® Co-Collector
90/300 LOADER SPRING GRABBERS
372-0339, 372-0340

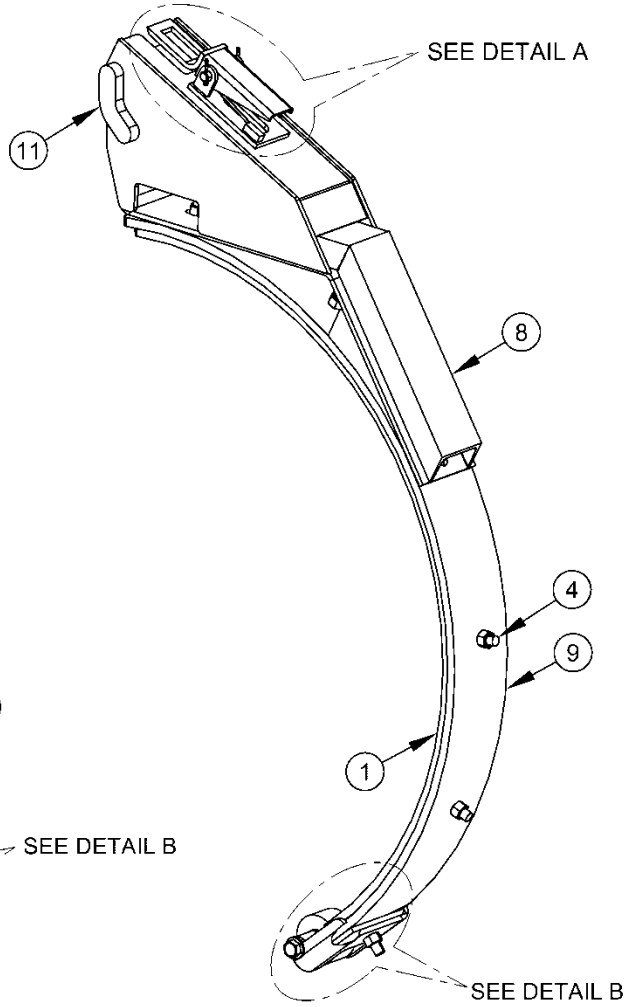
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-0339	GRABBERS, Spring, Loader w/90 Gal.	A	REF
-	372-0340	GRABBERS, Spring, Loader w/300 Gal.	B	REF
1	014-1854	LUG, Latch, Spring Grabbers	-	2
2	093-2681	ASSEMBLY, Grabber, Spring, 90 Gal. (See Pg. 2089)	A	2
2a	093-2682	ASSEMBLY, Grabber, Spring, 300 Gal. (See Pg. 2089)	B	2
3	372-0346	ASSEMBLY, Loader (See Pg. 2063)	-	1

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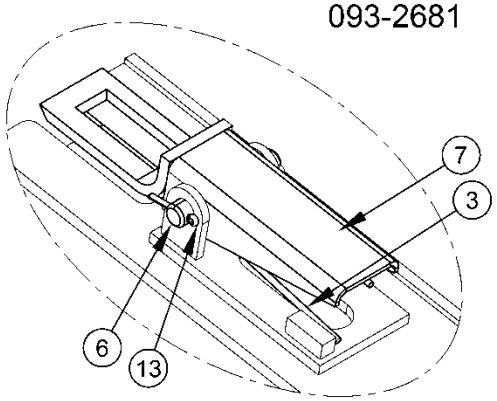
Rapid Rail® Co-Collector
SPRING GRABBER ASSEMBLY
093-2681, 093-2682



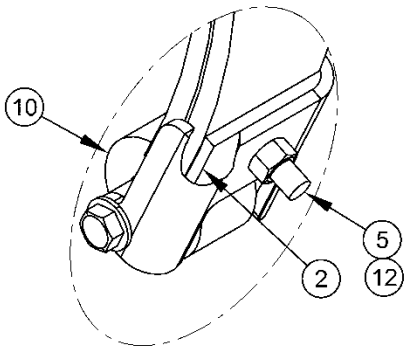
093-2681



093-2682



DETAIL A



DETAIL B

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SPRING GRABBER ASSEMBLY

093-2681, 093-2682

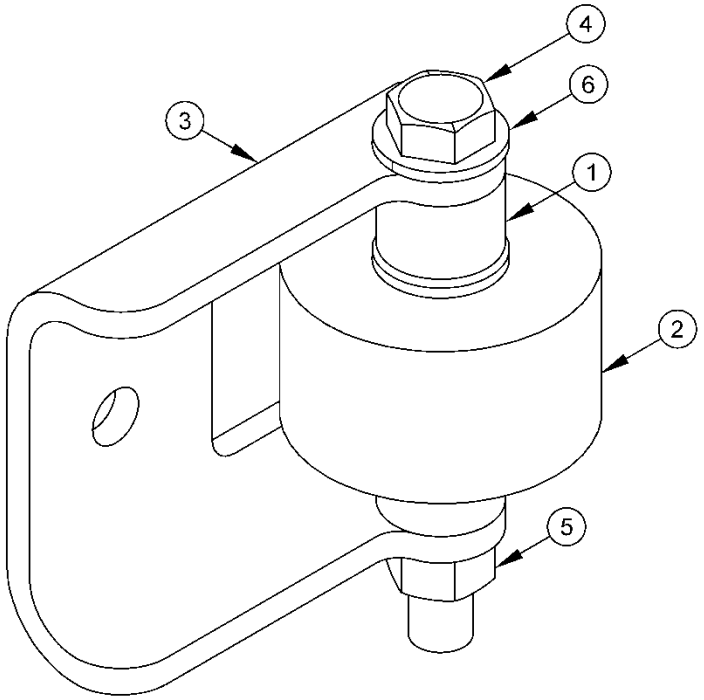
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	093-2681	ASSEMBLY, Grabber, Spring, 90 Gal.	A	REF
-	093-2682	ASSEMBLY, Grabber, Spring, 300 Gal.	B	REF
1	014-1711	LINER, Rubber, 90 Gal.	A	1
-1a	014-1710	LINER, Rubber, 300 Gal.	B	1
2	015-2929	SPACER, Roller Bracket	A	1
-2a	015-2930	SPACER, Roller Bracket	B	1
3	019-1265	SPRING, Torsion	-	1
4	047-2168-008	CAPSCREW, Button Head, Hex Socket, 1/2”-13 Thd. x 1-1/2”, Gr. 8, Zinc Plated	A	2
-4a	047-2168-008	CAPSCREW, Button Head, Hex Socket, 1/2”-13 Thd. x 1-1/2”, Gr. 8, Zinc Plated	B	5
5	047-2168-009	CAPSCREW, Button Head, Hex Socket, 1/2”-13 Thd. x 1-1/2”, Gr. 8, Zinc Plated	-	1
6	048-5233	PIN, Grabber Lock	-	1
7	053-1571	GRABBER, Latch	-	1
8	074-4591	CHANNEL, Reinforcement, Short	A	1
-8a	074-4592	WELDMENT, Bracket, Adapter	B	1
9	093-2030	BAR, Grabber	A	1
-9a	093-1961	BAR, Grabber, 300 Gal.	B	1
10	211-9095	ASSEMBLY, Roller Bracket (See Pg. 2091)	A	1
-10a	211-9097	ASSEMBLY, Roller Bracket (See Pg. 2091)	B	1
11	311-4787	BRACKET, Proximity Striker, Grabber	-	2
12	FSP231100	NUT, Lock, 1/2”-13, Gr. 5, Plated	A	3
-12a	FSP231100	NUT, Lock, 1/2”-13, Gr. 5, Plated	B	6
13	FSP340420	PIN, Cotter, 1/8” x 1”, Plated	-	2

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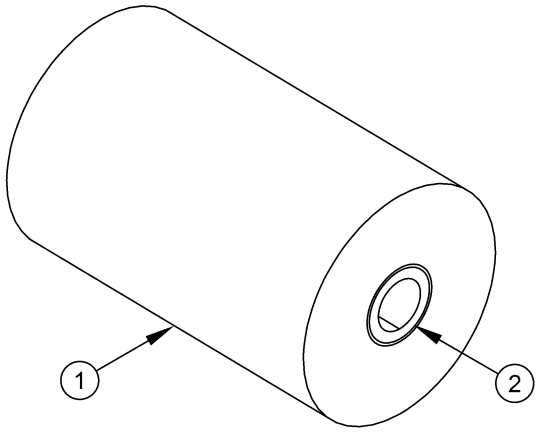
AUTOMATED ROLLER BRACKET ASSEMBLY

211-9095, 211-9097



ROLLER GRABBER ASSEMBLY

062-0805-001



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AUTOMATED ROLLER BRACKET ASSEMBLY

211-9095, 211-9097

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	211-9095	ASSEMBLY, Bracket, Roller, Automated	A	REF
-	211-9097	ASSEMBLY, Bracket, Roller, Automated	B	REF
1	054-9740	SUPPORT, Roller Tube	A	2
-1a	054-9741	SUPPORT, Roller Tube	B	2
2	062-0805-001	ASSEMBLY, Grabber, Roller, 1-5/16” (See Pg. 2091)	-	1
3	211-9094	BRACKET, Roller	A	1
-3a	211-9096	BRACKET, Roller	B	1
4	FS071156	HHCS, 1/2"-13 x 4-3/4”, Gr. 5	A	1
-4a	FS071164	HHCS, 1/2"-13 x 5-1/2”, Gr. 5	B	1
5	FS231100	NUT, Lock, 1/2”, Gr. 5	-	1
6	FS521100	WASHER, Flat, 1/2", SAE, Plain	-	3

ROLLER GRABBER ASSEMBLY

062-0805-001

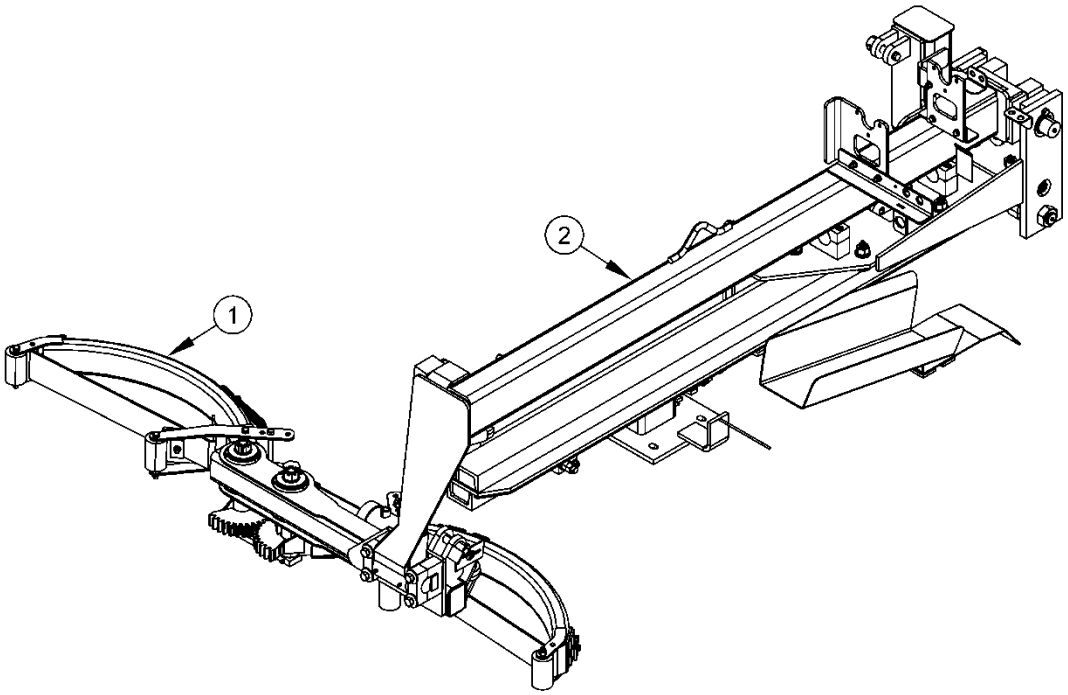
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	062-0805-001	ASSEMBLY, Grabber, Roller, 1-5/16”	-	REF
1	062-0712-001	SPRING, Grabber, 1.438”	-	1
2	354-1879-001	BUSHING, Roller, 1.44”	-	1

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NO ILLUSTRATION

LOADER WITH 30-90 GALLON BELT GRABBERS
372-0342



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Rapid Rail® Co-Collector

LOADER WITH 90 AND 300 GALLON GRABBERS

372-0341

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-0341	GRABBERS, Loader w/90 and 300 Gal.	-	REF
-3	093-2682	ASSEMBLY, Grabber, Spring, 90 Gal. (See Pg. 2089)	-	2
-4	093-2681	ASSEMBLY, Grabber, Spring, 300 Gal. (See Pg. 2089)	-	2
-5	372-0346	ASSEMBLY, Loader (See Pg. 2063)	-	1

Note: Items 1, 2, 6 and 7 are welded.

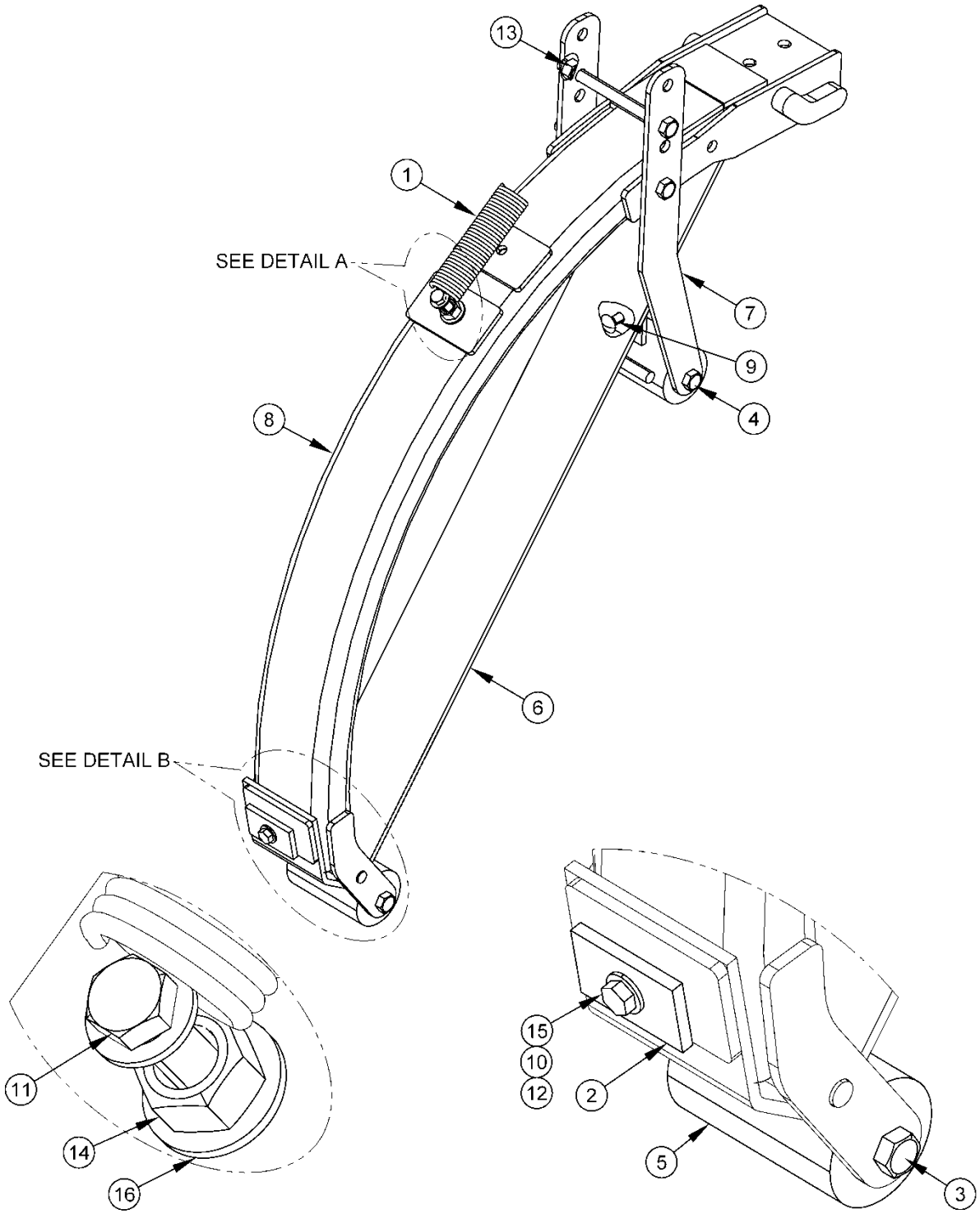
LOADER WITH 30-90 GALLON BELT GRABBERS

372-0342

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-0342	GRABBERS, Belt, Loader w/30-90 Gal.	-	REF
1	093-2417	ASSEMBLY, Arm, 60/90 Gal. (See Pg. 2095)	-	2
2	372-0346	ASSEMBLY, Loader (See Pg. 2063)	-	1

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60/90 GALLON ARM ASSEMBLY
093-2417



DETAIL A

DETAIL B

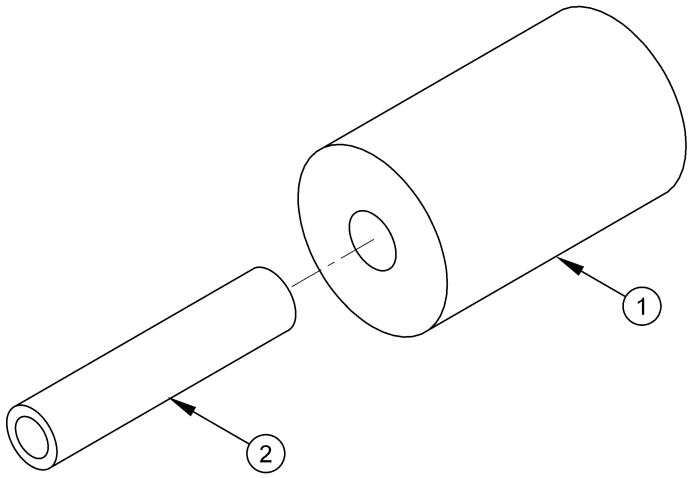
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Rapid Rail® Co-Collector
60/90 GALLON ARM ASSEMBLY
093-2417

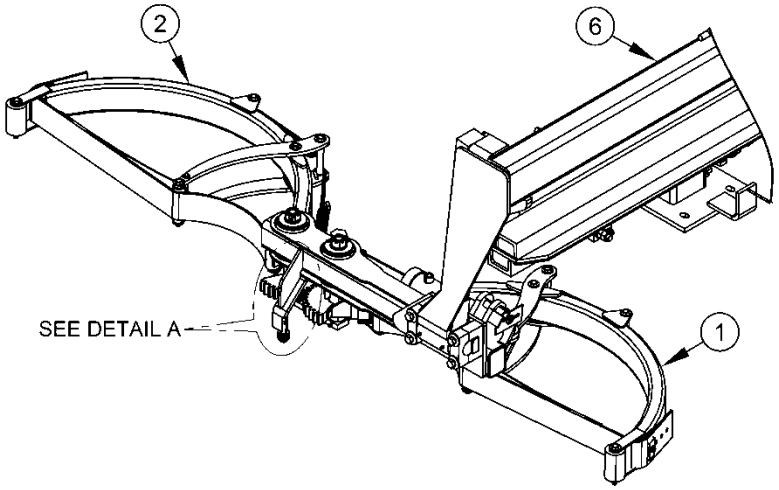
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	093-2417	ASSEMBLY, Arm, 60/90 Gal.	-	REF
1	019-1404	SPRING, Grabber, Hugger Extension	-	1
2	036-1636	PLATE, Belt Clamp, Universal Grabber	-	2
3	047-2314-001	BOLT, HH, 1/2” x 5-1/2”, Gr.5, Zinc Plated	-	1
4	047-2314-003	BOLT, HH, 1/2” x 6”, Gr. 5, Zinc Plated	-	3
5	062-0805	ASSEMBLY, Grabber, Roller, 4” (See Pg. 2097)	-	2
6	071-0843	BELT, Arm, 47”	-	1
7	093-2397	ARM, Inner	-	1
8	093-2416	WELDMENT, Arm, 60/90 Gal.	-	1
9	FSP020924	BOLT, Carriage, 3/8” x 1-1/2”, Plated	-	1
10	FSP070924	HHCS, 3/8"-16 x 1-1/2”, Gr. 5, Plated	-	1
11	FSP070930	HHCS, 3/8”-16 x 2”, Gr. 5, Plated	-	1
12	FSP230900	NUT, Lock, 3/8”-16, Gr. 5, Plated	-	1
13	FSP231100	NUT, Lock, 1/2”-13, Gr. 5, Plated	-	4
14	FSP241100	NUT, Lock, 1/2”-20, Gr. 5, Plated	-	1
15	FSP510900	WASHER, Flat, 3/8", Std., Plated	-	3
16	FSP521100	WASHER, Flat, 1/2", SAE, Plated	-	1

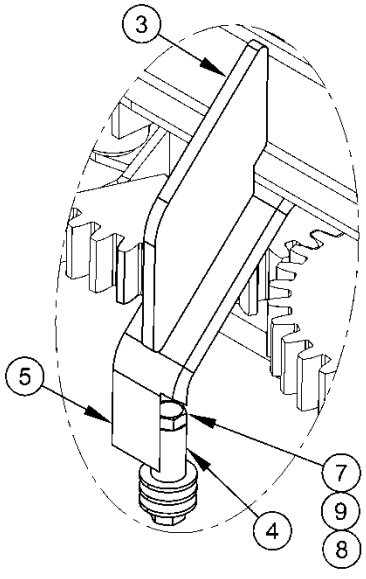
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Rapid Rail® Co-Collector
4” ROLLER GRABBER ASSEMBLY
062-0805



LOADER WITH BELT GRABBERS
372-0343, 372-0344





DETAIL A

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4” ROLLER GRABBER ASSEMBLY

062-0805

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	062-0805	ASSEMBLY, Grabber, Roller, 4”	-	REF
1	062-0712	ROLLER, Grabber, 4”	-	1
2	354-1879	BUSHING, Roller, 4”	-	1

LOADER WITH BELT GRABBERS

372-0343, 372-0344

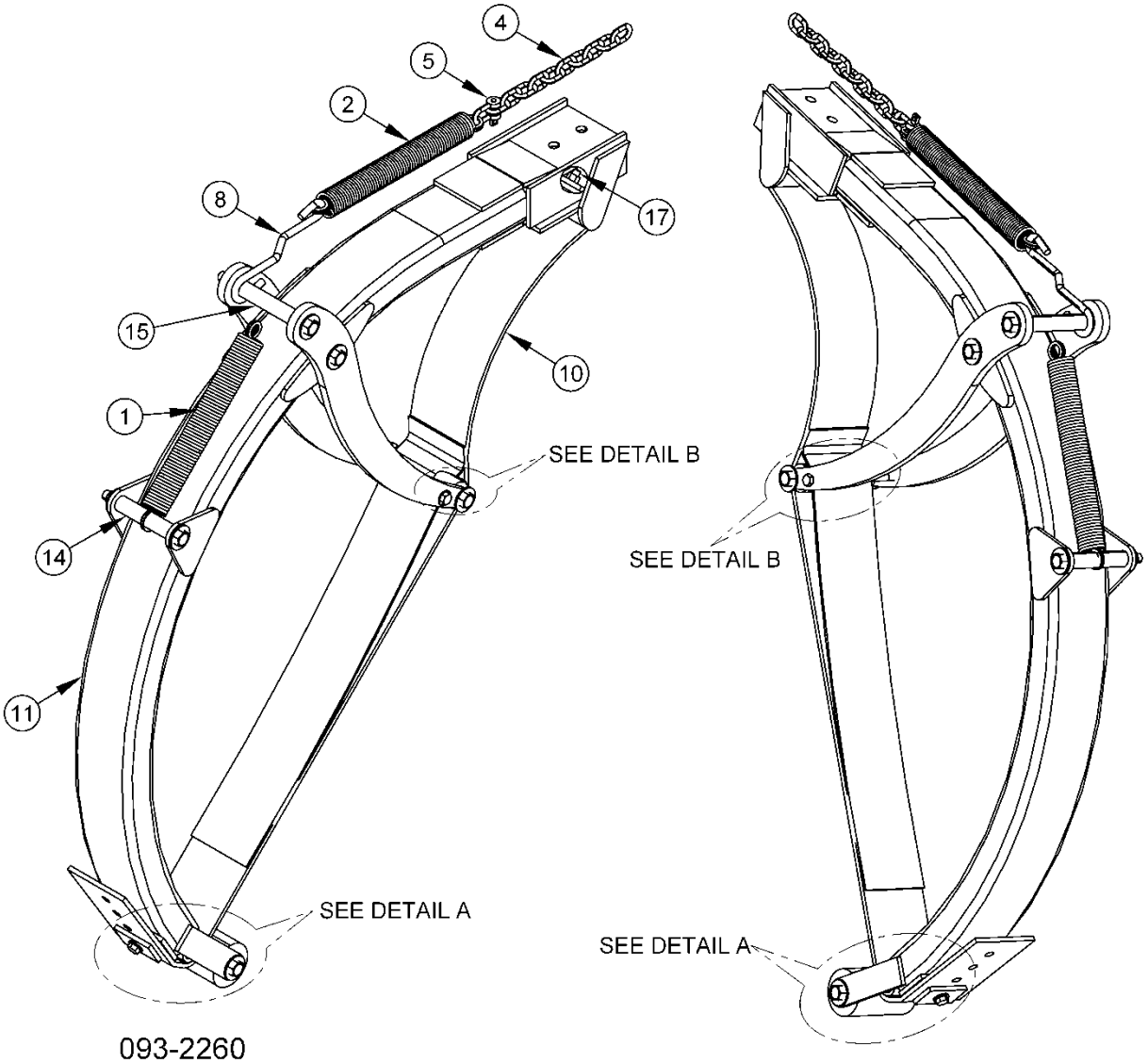
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-0343	GRABBERS, Belt, Loader w/90-300	A	REF
-	372-0344	GRABBERS, Belt, Loader w/30-90	B	REF
1	093-2259	ASSEMBLY, Arm, Grabber, Belt, Universal, 90/300 (See Pg. 2099)	A	1
-1a	093-2422	ASSEMBLY, Grabber, 30/90 Gal. (See Pg. 2103)	B	1
2	093-2260	ASSEMBLY, Arm, Grabber, Belt, Universal, 90/300 (See Pg. 2099)	A	1
-2a	093-2423	ASSEMBLY, Grabber, 30/90 Gal. (See Pg. 2103)	B	1
3	126-6904	GUSSET, Grabber, Chain Bracket	-	1
4	158-1960	PIPE, Chain, Hook, 1/2"	-	1
5	234-0117	BRACKET, Chain Mtg., Universal Belt Grabbers	-	1
6	372-0346	ASSEMBLY, Loader (See Pg. 2063)	-	1
7	FS071136	HHCS, 1/2"-13 x 2-3/4”, Gr. 5	-	1
8	FS231100	NUT, Lock, 1/2”-13, Gr. 5	-	1
9	FS511100	WASHER, Flat, 1/2” Std., Plain	-	3

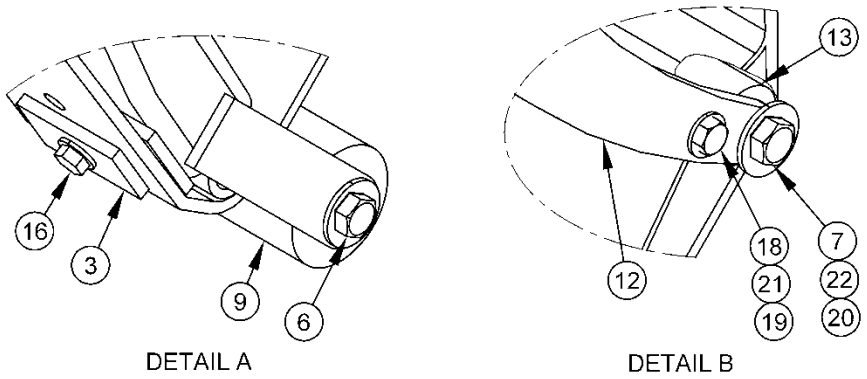
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90/300 UNIVERSAL BELT GRABBER ARM ASSEMBLY

093-2259, 093-2260





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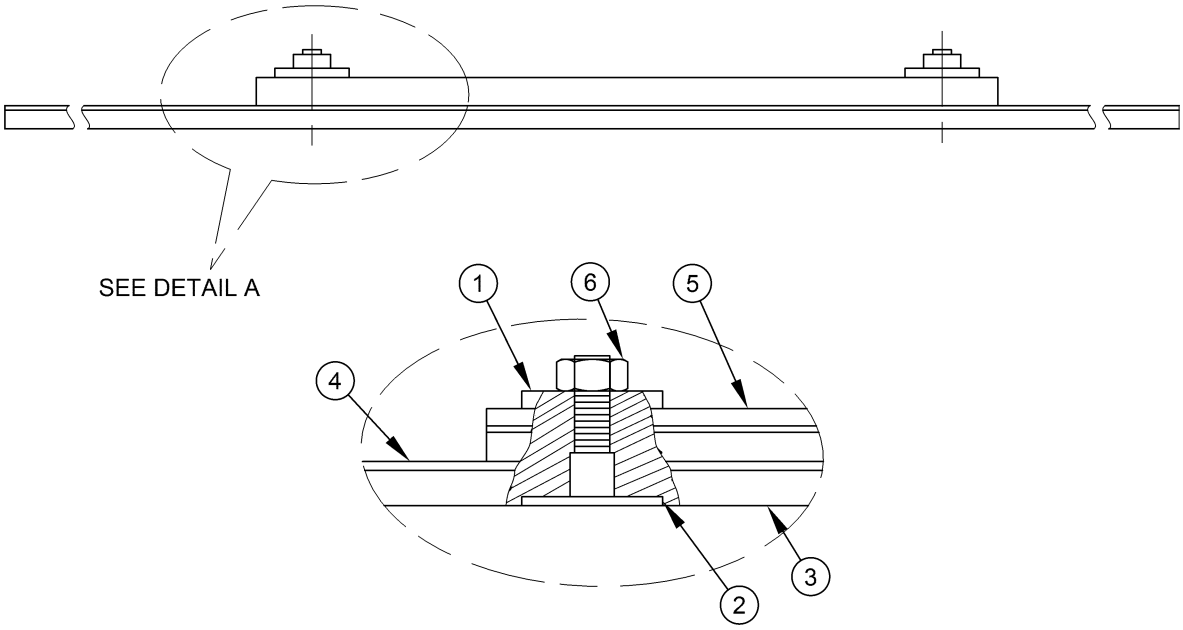
90/300 UNIVERSAL BELT GRABBER ARM ASSEMBLY

093-2259, 093-2260

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	093-2259	ASSEMBLY, Arm, Grabber, Belt, Universal, 90/300	A	REF
-	093-2260	ASSEMBLY, Arm, Grabber, Belt, Universal, 90/300	B	REF
1	019-1390	SPRING, Grabber, Outer, 10”	-	1
2	019-1392	SPRING, Belt Grabber, 1.312” Dia. x 12”, Zinc Coated	-	1
3	036-1636	PLATE, Belt Clamp, Universal Grabber	-	2
4	043-0797	CHAIN, Link, 10”	-	1
5	043-0803	CHAIN, Shackle	-	1
6	047-2314-001	BOLT, HH, 1/2” x 5-1/2”, Gr.5, Zinc Plated	-	2
7	047-2314-002	BOLT, HH, 1/2” x 6-1/2”, Gr. 5, Zinc Plated	-	3
8	053-2009	HOOK, Grabber, Right	A	1
-8a	053-2008	HOOK, Grabber, Left	B	1
9	062-0805	ASSEMBLY, Grabber, Roller, 4” (See Pg. 2097)	-	1
10	071-0838	BELT, Grip, Universal, 60/400 (See Pg. 2101)	-	1
11	093-2257	WELDMENT, Arm, Grabber	-	1
12	093-2261	ARM, Inner	-	2
13	177-3207	TUBE, Roller, 1-1/2” Dia.	-	1
14	177-3200-001	SPRING, Stabilizer, Universal Grabber, 4”, 90/300 Gal.	-	1
15	177-3200-002	SPRING, Stabilizer, Universal Grabber, 4-1/2”, 90/300 Gal.	-	1
16	FSP070922	HHCS, 3/8”-16 x 1-1/4”, Gr. 5, Plated	-	1
17	FSP070930	HHCS, 3/8”-16 x 2”, Gr. 5, Plated	-	1
18	FSP070974	HHCS, 3/8”-16 x 6-1/2”, Gr. 5, Plated	-	1
19	FSP230900	NUT, Lock, 3/8”-16, Gr. 5, Plated	-	2
20	FSP231100	NUT, Lock, 1/2”-13, Gr. 5, Plated	-	5
21	FSP510900	WASHER, Flat, 3/8”, Std., Plated	-	2
22	FSP511100	WASHER, Flat, 1/2" Std., Plated	-	10

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Rapid Rail® Co-Collector
60/400 UNIVERSAL GRIP BELT
071-0838



DETAIL A

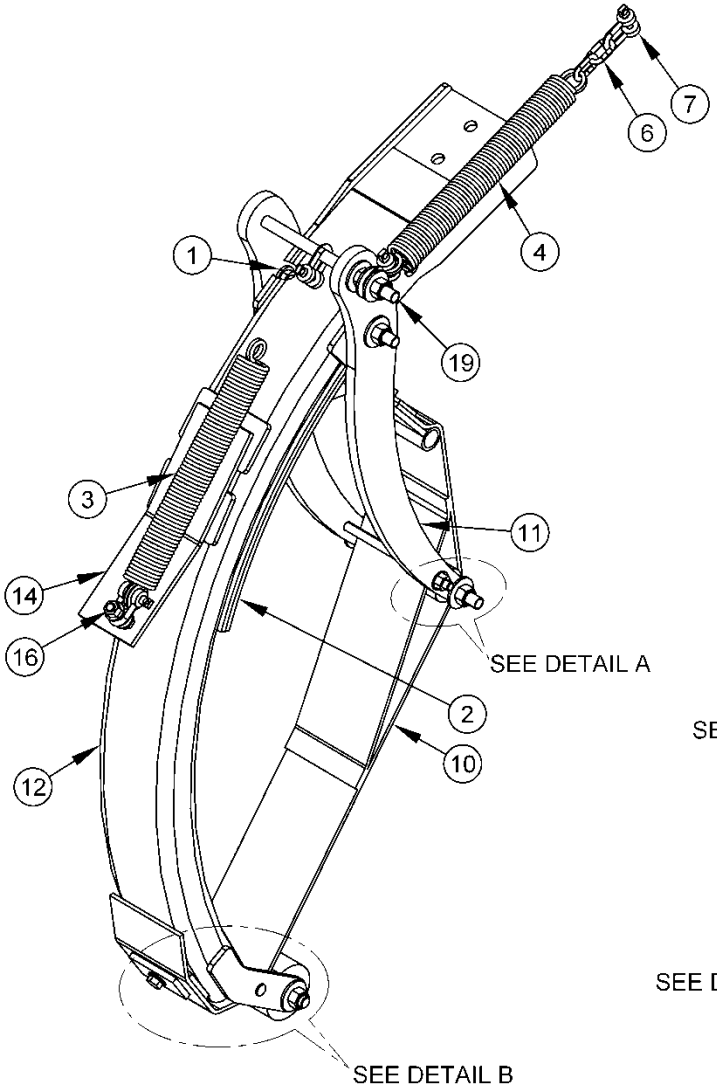
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Rapid Rail® Co-Collector
60/400 UNIVERSAL GRIP BELT
071-0838

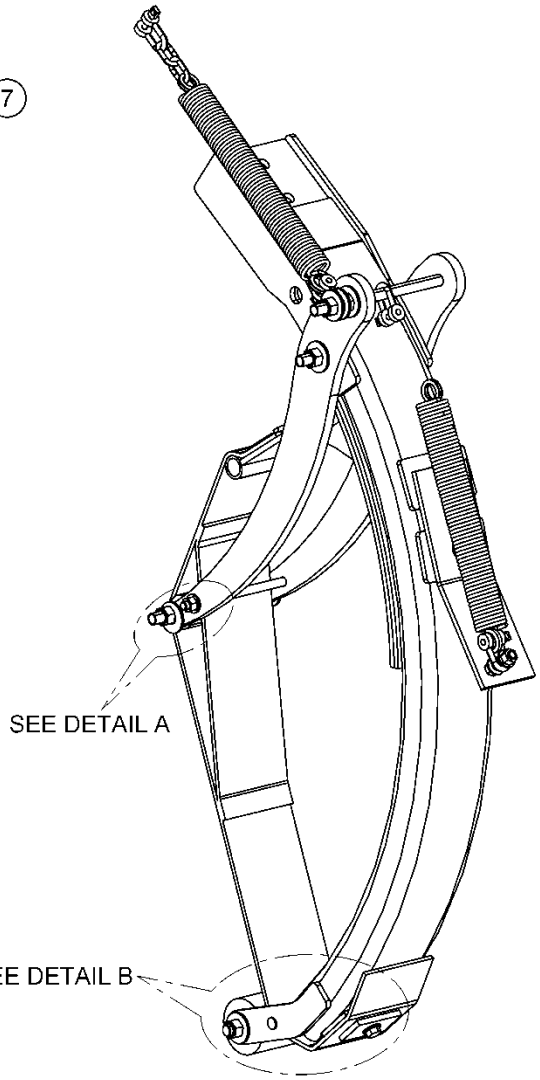
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	071-0838	BELT, Grip, Universal, 60/400	-	REF
1	036-1639	PLATE, Back Belt	-	2
2	047-2307	BOLT, Elevator, 1/4" x 1”	-	6
3	071-0839	GRIP, Belt	-	1
4	071-0840	STRAP, Belt	-	1
5	071-0841	BELT, Back, 18”	-	1
6	FS230700	NUT, Lock, 1/4”-20, Gr. 5	-	6

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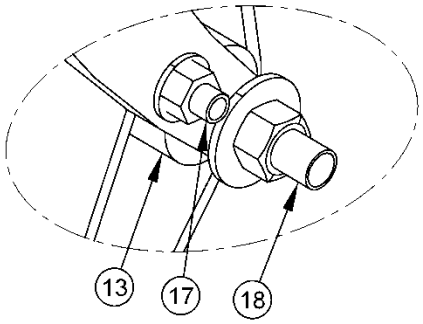
Rapid Rail® Co-Collector
30/90 GALLON GRABBER ASSEMBLY
093-2422, 093-2423



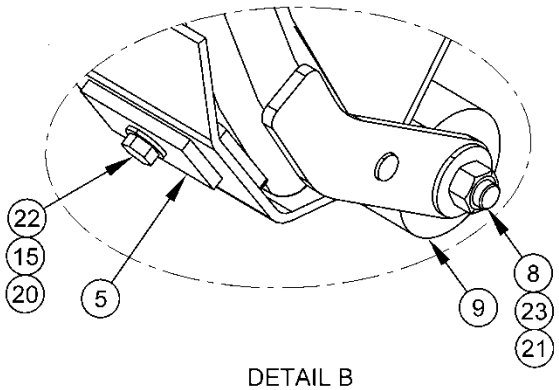
093-2422



093-2423



DETAIL A



DETAIL B

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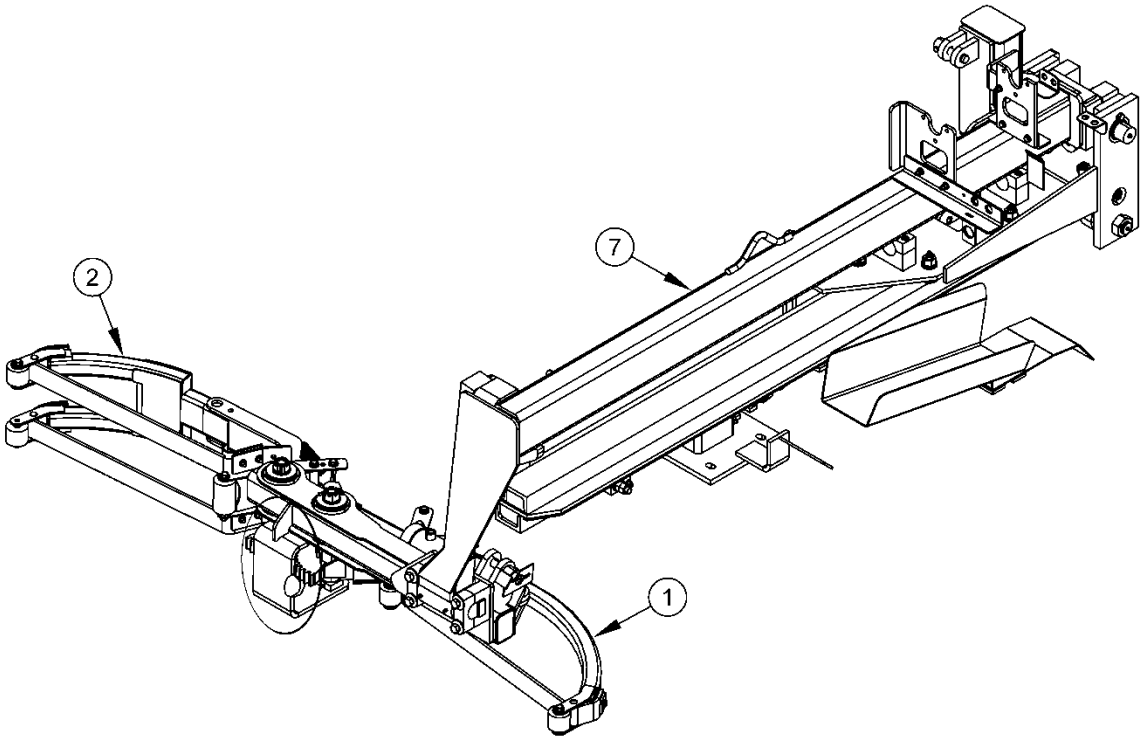
30/90 GALLON GRABBER ASSEMBLY

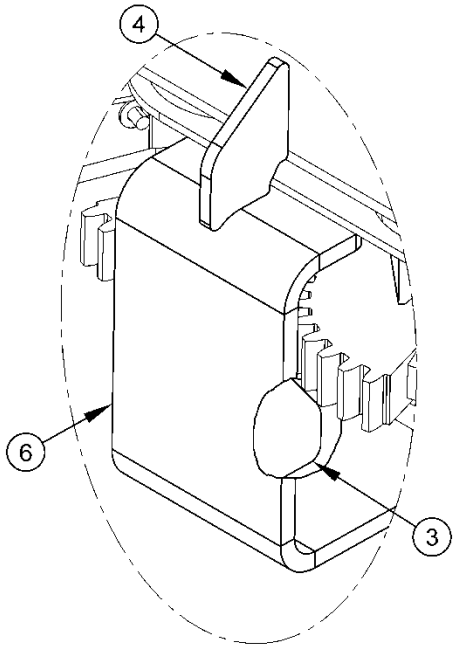
093-2422, 093-2423

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	093-2422	ASSEMBLY, Grabber, 30/90 Gal.	A	REF
-	093-2423	ASSEMBLY, Grabber, 30/90 Gal.	B	REF
1	003-4417	BEARING, Flange, 1/2" ID	-	2
2	014-1852	WELDMENT, Saddle, SS	A	1
-2a	014-1853	WELDMENT, Saddle, CS	B	1
3	019-1390	SPRING, Grabber, Outer, 10”	-	1
4	019-1392	SPRING, Belt Grabber, 1.312” Dia. x 12”, Zinc Coated	-	1
5	036-1636	PLATE, Belt Clamp, Universal Grabber	-	2
6	043-0794	CHAIN, Binding, 2 Link, 3/16”	-	1
7	043-0803	CHAIN, Shackle	-	4
8	047-2314-001	BOLT, HH, 1/2” x 5-1/2”, Gr.5, Zinc Plated	-	1
9	062-0805	ASSEMBLY, Grabber, Roller, 4” (See Pg. 2097)	-	1
10	071-0838	BELT, Grip, Universal, 60/400 (See Pg. 2101)	-	1
11	093-2261	ARM, Inner	-	2
12	093-2421	WELDMENT, Arm, 30/90 Gal.	-	1
13	177-3207	TUBE, Roller, 1-1/2” Dia.	-	1
14	234-0111	PLATE, Retainer Spring, 1/4", 30/90 Gal.	A	1
-14a	234-0112	PLATE, Retainer Spring, 1/4", 30/90 Gal.	B	1
15	FSP070924	HHCS, 3/8"-16 x 1-1/2”, Gr. 5, Plated	-	9
16	FSP070930	HHCS, 3/8”-16 x 2”, Gr. 5, Plated	-	1
17	FSP070974	HHCS, 3/8”-16 x 6-1/2”, Gr. 5, Plated	-	1
18	FSP071180	HHCS, 1/2"-13 x 7”, Gr. 5, Plated	-	2
19	FSP071190	HHCS, 1/2"-13 x 8”, Gr. 5, Plated	-	1
20	FSP230900	NUT, Lock, 3/8”-16, Gr. 5, Plated	-	4
21	FSP231100	NUT, Lock, 1/2”-13, Gr. 5, Plated	-	5
22	FSP510900	WASHER, Flat, 3/8”, Std., Plated	-	15
23	FSP511100	WASHER, Flat, 1/2" Std., Plated	-	10

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LOADER WITH TRI-CUFF GRABBERS
372-0345





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Rapid Rail® Co-Collector
LOADER WITH TRI-CUFF GRABBERS
372-0345

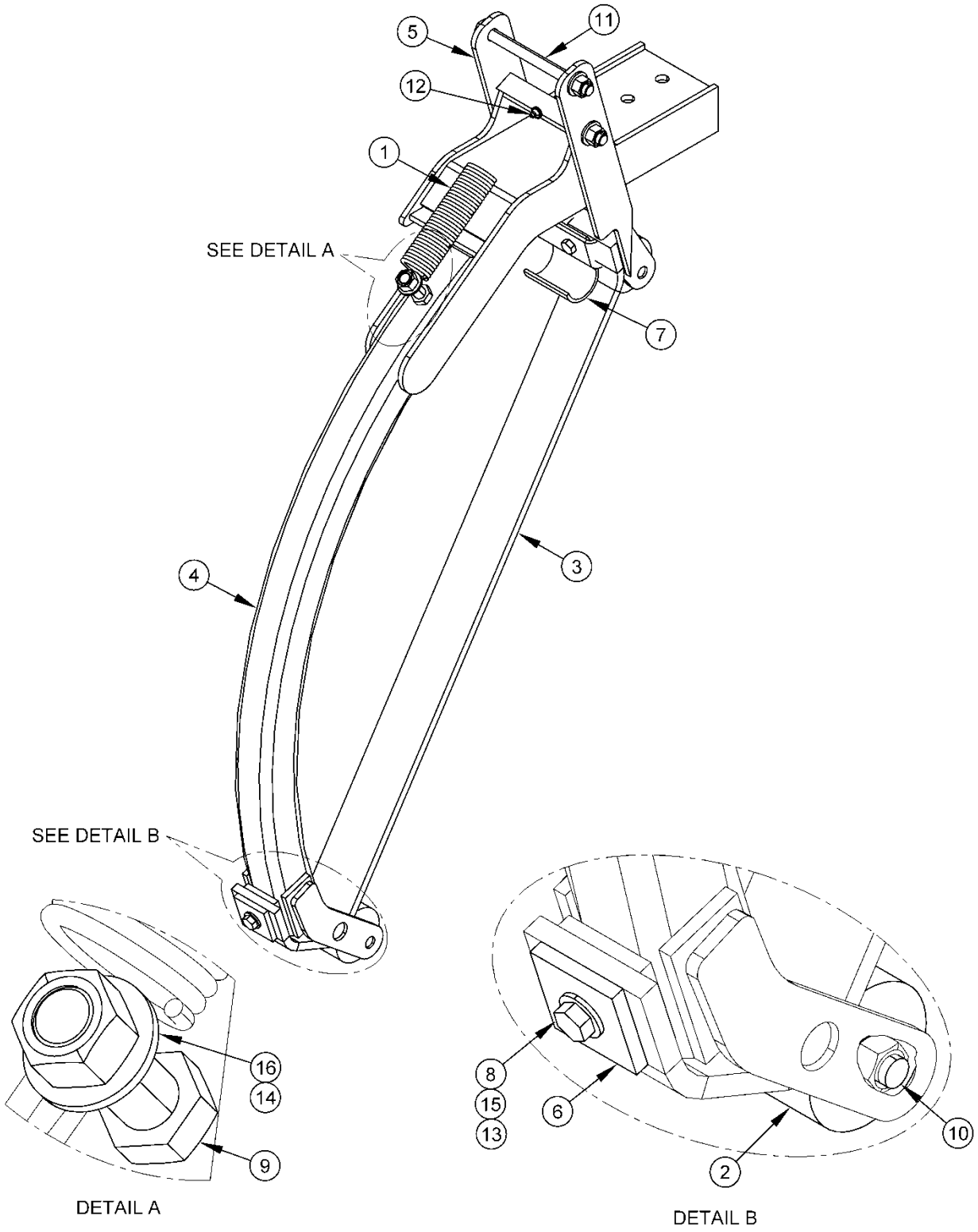
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-0345	GRABBERS, Loader w/Tri-Cuff	-	REF
1	093-2643	ASSEMBLY, Arm, Gripper, Front, 30/110 Gal. (See Pg. 2107)	-	1
2	093-2707	ARM, Tri-Cuff, Rear, 30/110 Gal. (See Pg. 2111)	-	1
3	126-6905	BRACE, Grab, Tri-Cuff, Inside	-	1
4	126-6906	BRACE, Grab, Tri-Cuff, Top	-	1
-5	272-6797	KIT, Hopper, Rubber Mtg., Hugger Grabber (See Pg. 2113)	-	1
6	311-0160	BRACKET, Mtg., Chain	-	1
7	372-0346	ASSEMBLY, Loader (See Pg. 2063)	-	1

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30/110 GALLON FRONT GRIPPER ARM ASSEMBLY

093-2643



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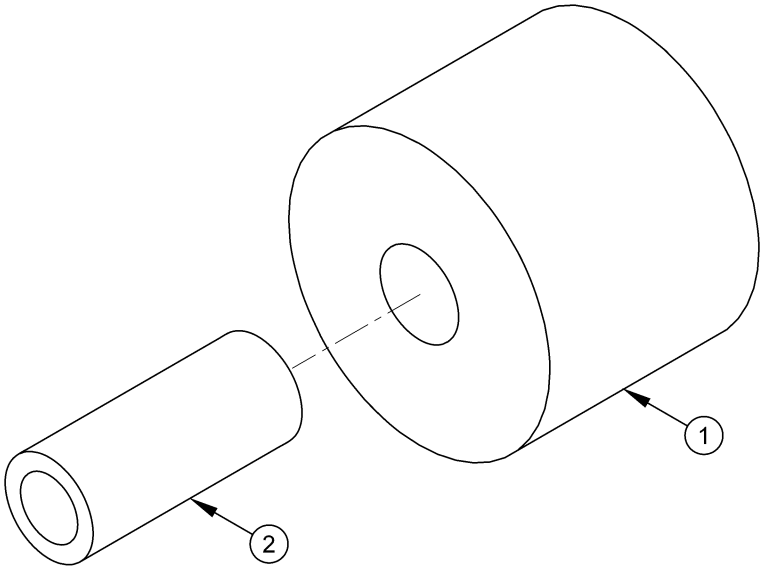
30/110 GALLON FRONT GRIPPER ARM ASSEMBLY

093-2643

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	093-2643	ASSEMBLY, Arm, Gripper, Front, 30/110 Gal.	-	REF
1	019-1404	SPRING, Grabber, Hugger Extension	-	1
2	062-0804	ASSEMBLY, Roller, Tri-Cuff (See Pg. 2109)	-	2
3	071-0837	BELT, Hugger, 30/150	-	1
4	093-2614	GRIPPER, Forward, 30-110 Gal.	-	1
5	093-3075	ARM, Inner, Single Grabber, Tri-Cuff	-	1
6	234-0568	PLATE, Belt Mtg.	-	1
7	311-2509	ASSEMBLY, Plate, Retainer Belt (Item Welded)	-	1
8	FS070924	HHCS, 3/8"-16 x 1-1/2”, Gr. 5	-	2
9	FS071124	HHCS, 1/2"-13 x 1-1/2”, Gr. 5	-	1
10	FS071140	HHCS, 1/2"-13 x 3”, Gr. 5	-	2
11	FS071170	HHCS, 1/2"-13 x 6”, Gr. 5, Plated	-	2
12	FS190400	FITTING, Grease, Str., 1/8” NPT	-	1
13	FS230900	NUT, Lock, 3/8”-16, Gr. 5	-	1
14	FS231100	NUT, Lock, 1/2”, Gr. 5	-	3
15	FS510900	WASHER, Flat, 3/8”, Std., Plain	-	2
16	FS521100	WASHER, Flat, 1/2", SAE, Plain	-	7

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TRI-CUFF ROLLER ASSEMBLY
062-0804



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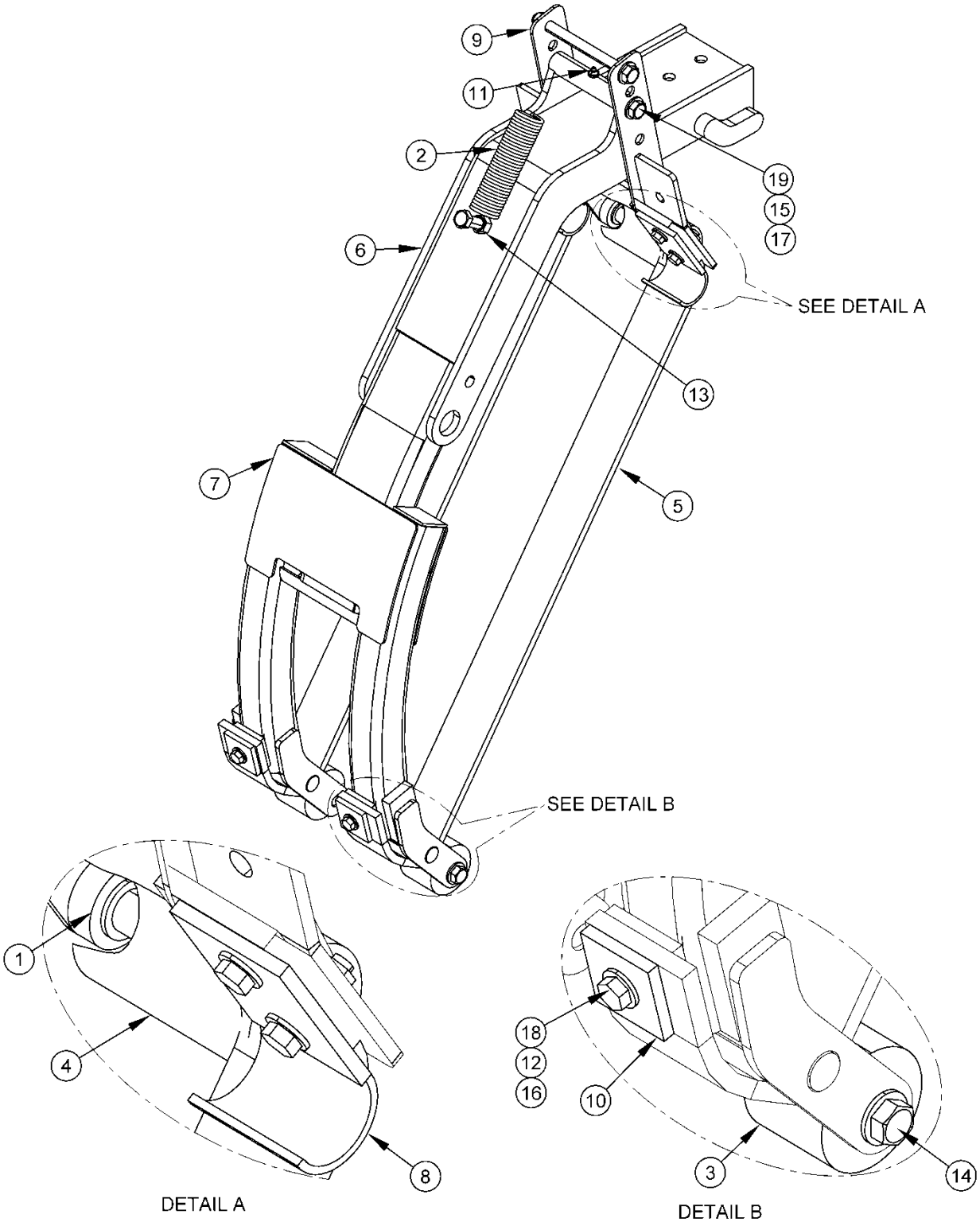
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TRI-CUFF ROLLER ASSEMBLY
062-0804

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	062-0804	ASSEMBLY, Roller, Tri-Cuff	-	REF
1	062-0804-001	ROLLER, Grabber, 2”	-	1
2	354-1688	PIPE, Roller Bearing	-	1

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30/110 GALLON REAR TRI-CUFF ARM
093-2707



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30/110 GALLON REAR TRI-CUFF ARM

093-2707

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	093-2707	ARM, Tri-Cuff, Rear, 30/110 Gal.	-	REF
1	015-2928	SPACER, Roller, 1-1/2” OD	-	1
2	019-1404	SPRING, Grabber, Hugger Extension	-	1
3	062-0804	ASSEMBLY, Roller, Tri-Cuff (See Pg. 2109)	-	2
4	062-0805	ASSEMBLY, Grabber, Roller, 4” (See Pg. 2097)	-	1
5	071-0837	BELT, Hugger, 30/150	-	2
6	093-2607	GRIPPER, Inner, 30/100 Gal.	-	1
7	093-2686	GRIPPER, Outer, Tri-Cuff	-	1
8	093-2804	ASSEMBLY, Plate, Retainer Belt (Item Welded)	-	2
9	093-3074	ARM, Inner, Single Grabber	-	1
10	234-0568	PLATE, Belt Mtg.	-	2
11	FS190400	FITTING, Grease, Str., 1/8” NPT	-	1
12	FSP070924	HHCS, 3/8"-16 x 1-1/2”, Gr. 5, Plated	-	6
13	FSP071124	HHCS, 1/2"-13 x 1-1/2”, Gr. 5, Plated	-	1
14	FSP071140	HHCS, 1/2"-13 x 3”, Gr. 5, Plated	-	2
15	FSP071170	HHCS, 1/2"-13 x 6”, Gr. 5, Plated	-	3
16	FSP230900	NUT, Lock, 3/8”-16, Gr. 5, Plated	-	4
17	FSP231100	NUT, Lock, 1/2”-13, Gr. 5, Plated	-	4
18	FSP510900	WASHER, Flat, 3/8", Std., Plated	-	10
19	FSP521100	WASHER, Flat, 1/2", SAE, Plated	-	10

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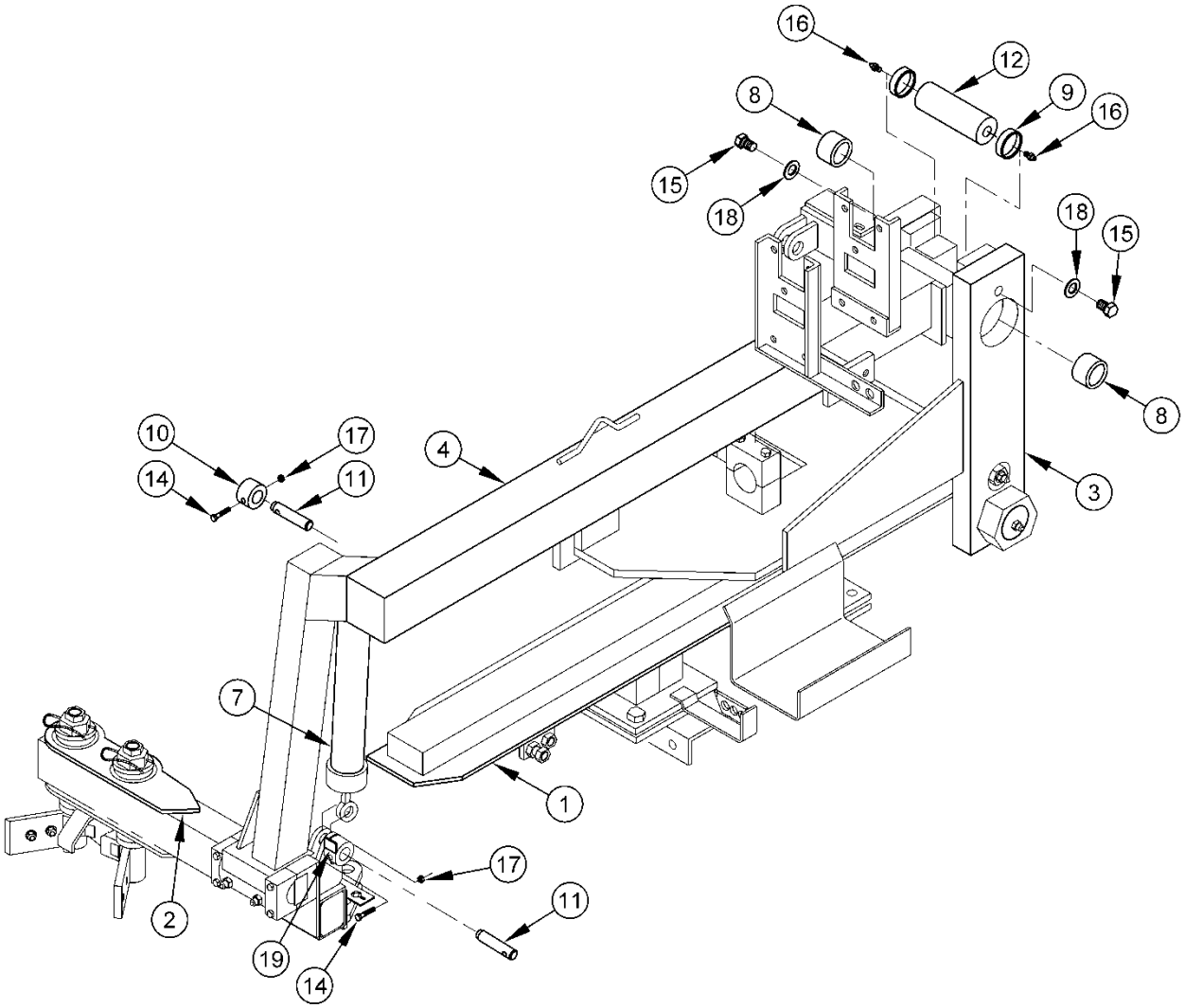
HUGGER GRABBER RUBBER MOUNTING HOPPER KIT

272-6797

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	272-6797	KIT, Hopper, Rubber Mtg., Hugger Grabber	-	REF
-1	134-9408	SHIELD, Hopper, Spill, Hugger Grabber	-	1
-2	FS020924	BOLT, Carriage, 3/8” x 1-1/2"	-	4
-3	FS230900	NUT, Lock, 3/8”-16, Gr. 5	-	4
-4	FS520900	WASHER, Flat, 3/8” SAE, Plain	-	4
-5	M0-05	KIT, Mtg., Rubber, Hopper	-	1
-6	-	NA	-	REF

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LOADER WITHOUT GRABBERS
372-0442



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LOADER WITHOUT GRABBERS
372-0442

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-0442	GRABBERS, w/o Loader (Std. Gears)	-	REF
1	093-2994	ASSEMBLY, Track, Loader (See Pg. 2069)	-	1
2	093-2739	ASSEMBLY, Arm, Dump (See Pg. 2065)	-	1
3	272-6630	ASSEMBLY, Carriage (See Pg. 2075)	-	1
4	372-0351	ASSEMBLY, Lift Arm (See Pg. 2077)	-	1
-5	372-0331	KIT, Hydraulics, Loader (See Section 4)	-	1
-6	108-7598	KIT, Electrical (See Section 6)	-	1
7	001-6416	CYLINDER, Grip (See Section 5)	-	REF
8	003-4432	BEARING, Spherical, 2”	-	2
9	015-3313	SPACER, Lift Arm, Pivot Pin, 2-5/8” x 9/32”	-	2
10	040-2218	COLLAR, Retaining, 1-9/16" OD x 1/4" W	-	1
11	048-5644	PIN, Lift, 4-1/4”	-	2
12	048-5856	PIN, Arm Pivot	-	1
-13	272-8695-002	KIT, Air Line, Loader (See Pg. 2079)	-	1
14	FS070930	HHCS, 3/8”-16 x 2”, Gr. 5	-	2
15	FS071120	HHCS, 1/2"-13 x 1”, Gr. 5	-	2
16	FS190700	FITTING, Grease, Str., 1/4"-28	-	2
17	FS230900	NUT, Lock, 3/8”-16, Gr. 5	-	2
18	FS551100	WASHER, Lock, 1/4", Plated	-	2
19	015-3030	SPACER, Tube Clamp	-	1

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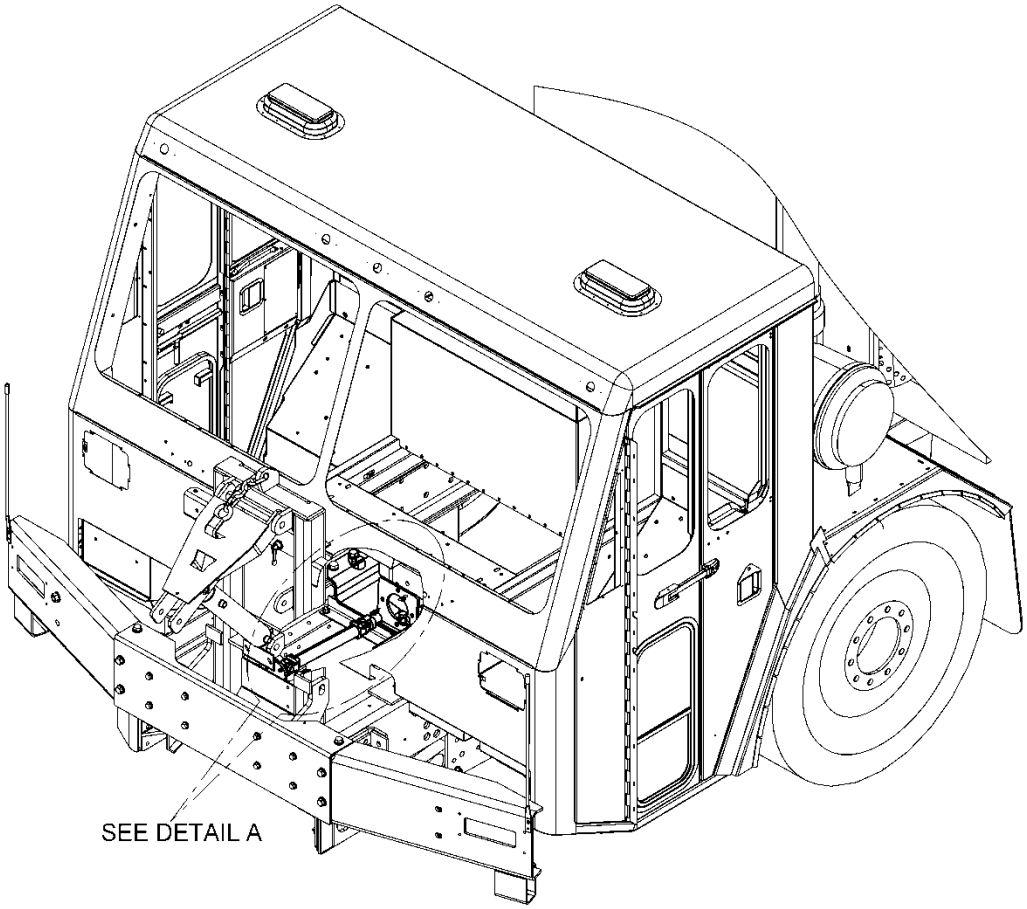
FRONT MOUNT DRIVE KITS

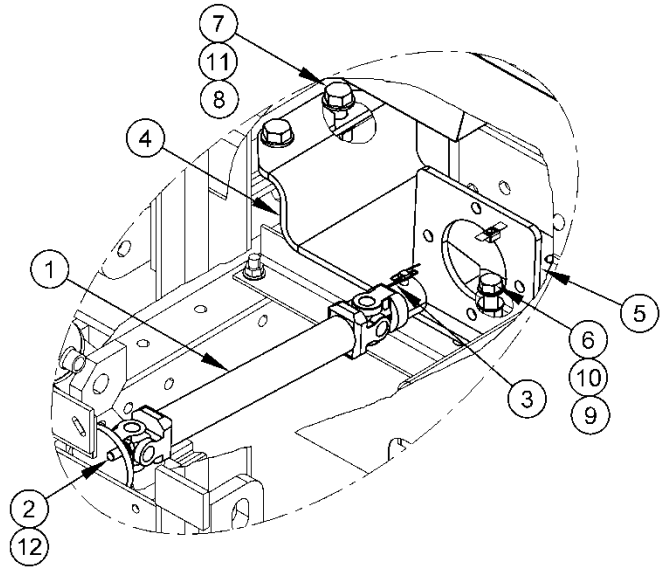
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CCC FRONT MOUNT 2 AND 4 BOLT FLANGE PUMP BRACKET KITS

372-5695, 372-5695-001





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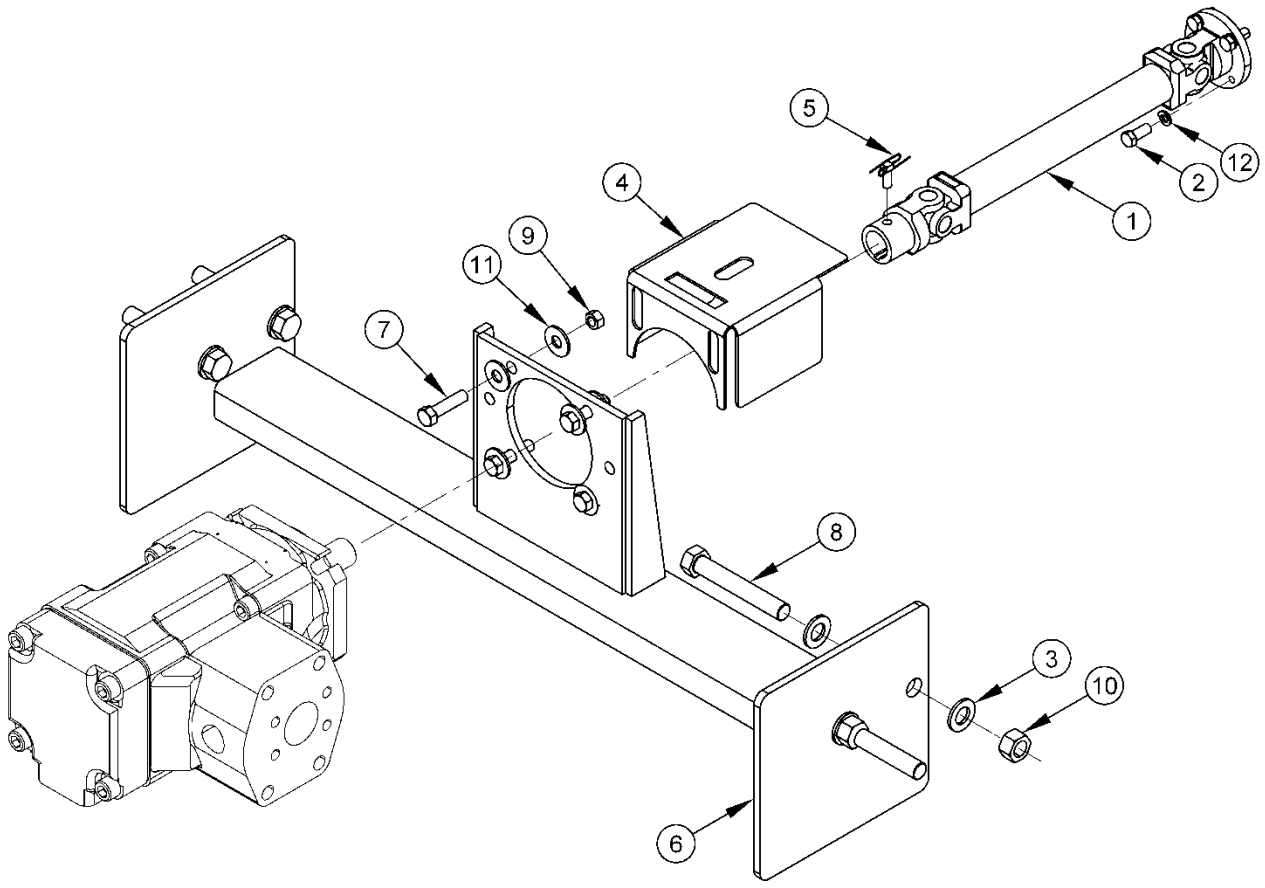
CCC FRONT MOUNT 2 AND 4 BOLT FLANGE PUMP BRACKET KITS

372-5695, 372-5695-001

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-5695	KIT, Front Mount Pump Bracket, 4 Bolt Flange, CCC	A	REF
-	372-5695-001	KIT, Front Mount Pump Bracket, 2 Bolt Flange, CCC	B	REF
1	030-0661	ASSEMBLY, Driveline	-	1
2	047-1794	HHCS, 7/16"-20 x 1", Gr.8, Yellow, Zinc Dichromate Plated	-	4
3	263-0042	WIRE, Safety, Driveline Lock	-	1
4	311-5121	BRACKET, Pump, Front Mount, CCC	-	1
5	311-5121-004	WELDMENT, Bracket	A	1
-5a	311-5121-005	WELDMENT, Bracket	B	1
6	FSP081330	HHCS, 5/8”-11 x 2”, Gr. 8, Plated	-	4
7	FSP081534	HHCS, 3/4"-10 x 2-1/2”, Gr. 5, Plated	-	4
8	FSP231500	NUT, Lock, 3/4”-10, Gr. 5, Plated	-	4
9	FSP241300	NUT, Lock, 5/8”-18, Gr. 5, Plated	-	4
10	FSP521300	WASHER, Flat, 5/8”, SAE, Plated	-	8
11	FSP521500	WASHER, Flat, 3/4", SAE, Plain	-	8
12	FSP551000	WASHER, Lock, 7/16", Plated	-	4

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FRONT MOUNT PUMP KIT
372-5477



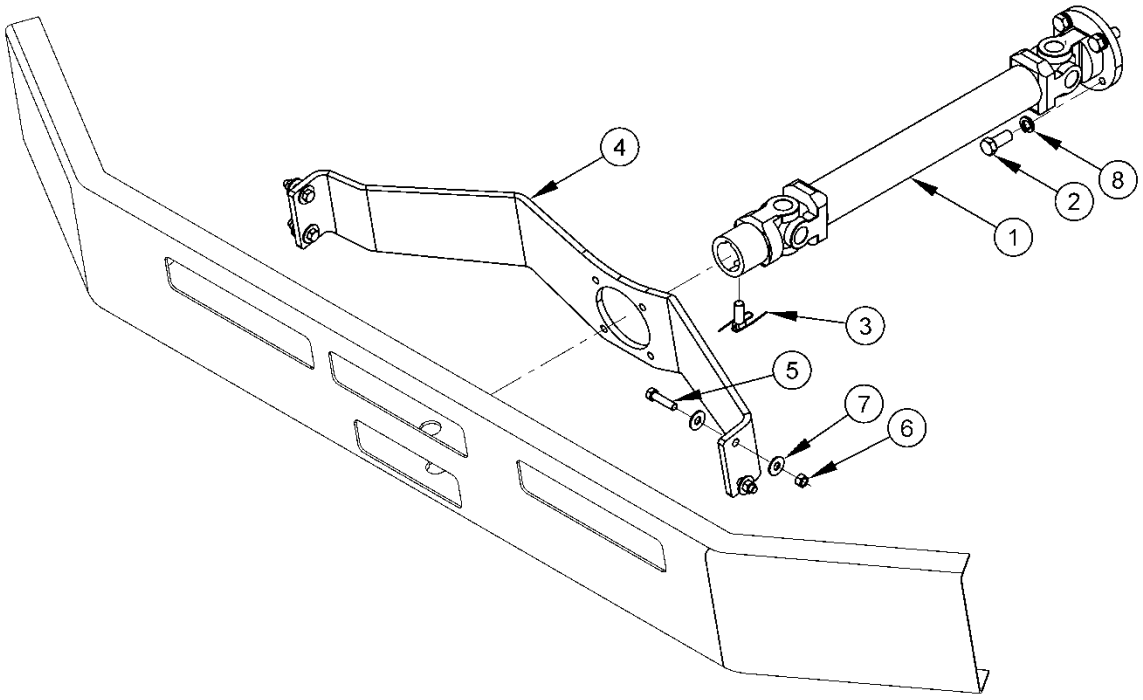
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FRONT MOUNT PUMP KIT
372-5477

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-5477	KIT, Pump, Front Mount	-	REF
1	030-0661	ASSEMBLY, Driveline	-	1
2	047-1794	HHCS, 7/16"-20 x 1", Gr.8, Yellow, Zinc Dichromate Plated	-	4
3	055-1391-008	WASHER, Steel, Hardened, 3/4” x 0.16” Thickness, Zinc, Plated	-	8
4	211-6917	GUARD, Pump Shaft	-	1
5	263-0042	WIRE, Safety, Driveline Lock	-	1
6	311-4726	ASSEMBLY, Bracket, Pump, Mount, Peterbilt	-	1
7	FSP071130	HHCS, 1/2”-13 x 2”, Gr. 5, Plated	-	4
8	FSP071560	HHCS, 3/4"-10 x 5”, Gr. 5, Plated	-	4
9	FSP231000	NUT, Lock, 7/16”-14, Gr. 5, Plated	-	2
10	FSP231500	NUT, Lock, 3/4”-10, Gr. 5, Plated	-	4
11	FSP511100	WASHER, Flat, 1/2" Std., Plated	-	6
12	FSP551000	WASHER, Lock, 7/16", Plated	-	4

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MACK MR FRONT MOUNT PUMP KIT
372-5694



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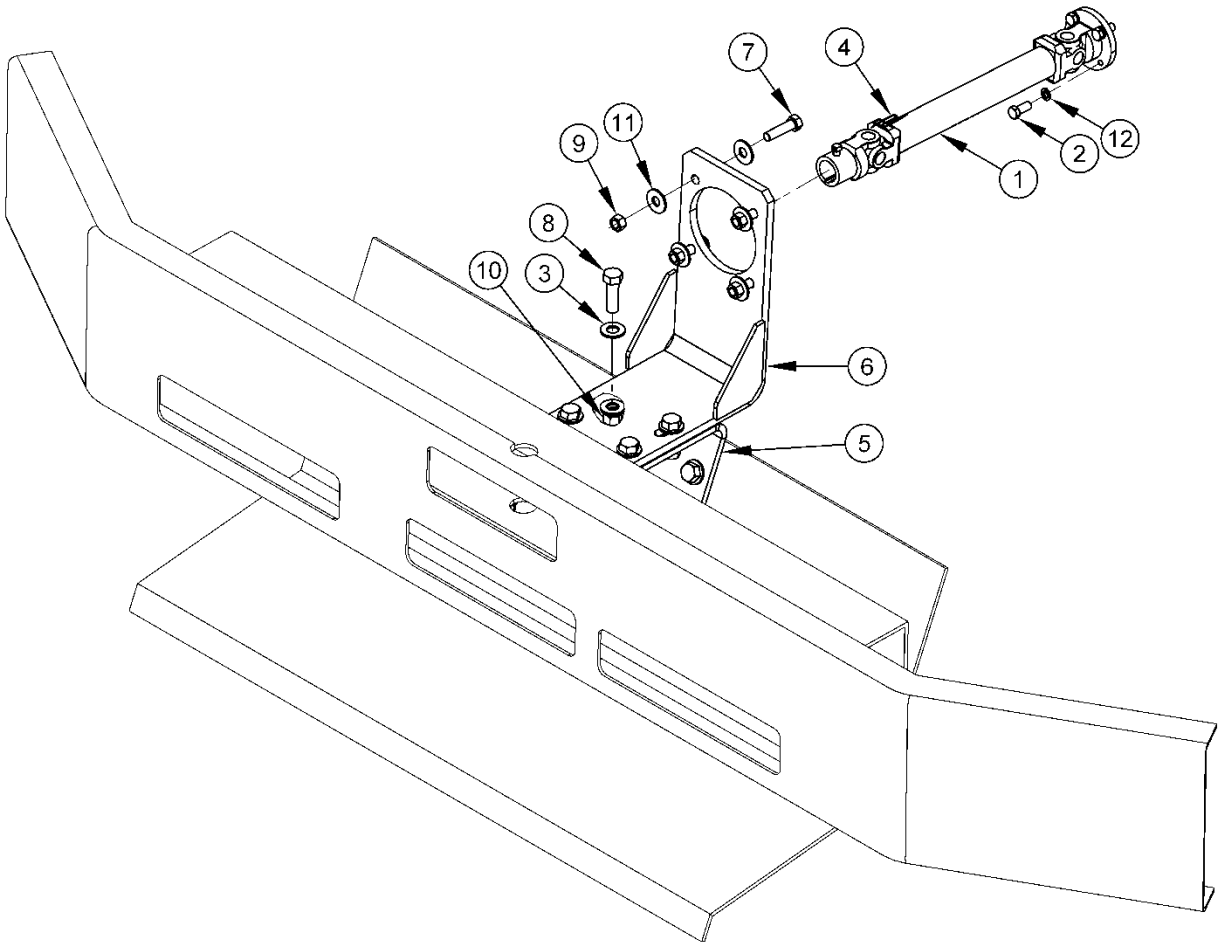
MACK MR FRONT MOUNT PUMP KIT

372-5694

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-5694	KIT, Pump, Front Mount, Mack MR	-	REF
1	030-0661	ASSEMBLY, Driveline	-	1
2	047-1794	HHCS, 7/16"-20 x 1", Gr.8, Yellow, Zinc Dichromate Plated	-	4
3	263-0042	WIRE, Safety, Driveline Lock	-	1
4	311-4864	Bracket, Pump, Plate, 1/2”	-	1
5	FSP071130	HHCS, 1/2”-13 x 2”, Gr. 5, Plated	-	4
6	FSP071130	HHCS, 1/2”-13 x 2”, Gr. 5, Plated	-	4
7	FSP511100	WASHER, Flat, 1/2" Std., Plated	-	8
8	FSP551000	WASHER, Lock, 7/16", Plated	-	4

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MACK LE MOUNT PUMP KIT
372-5685



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MACK LE MOUNT PUMP KIT
372-5685

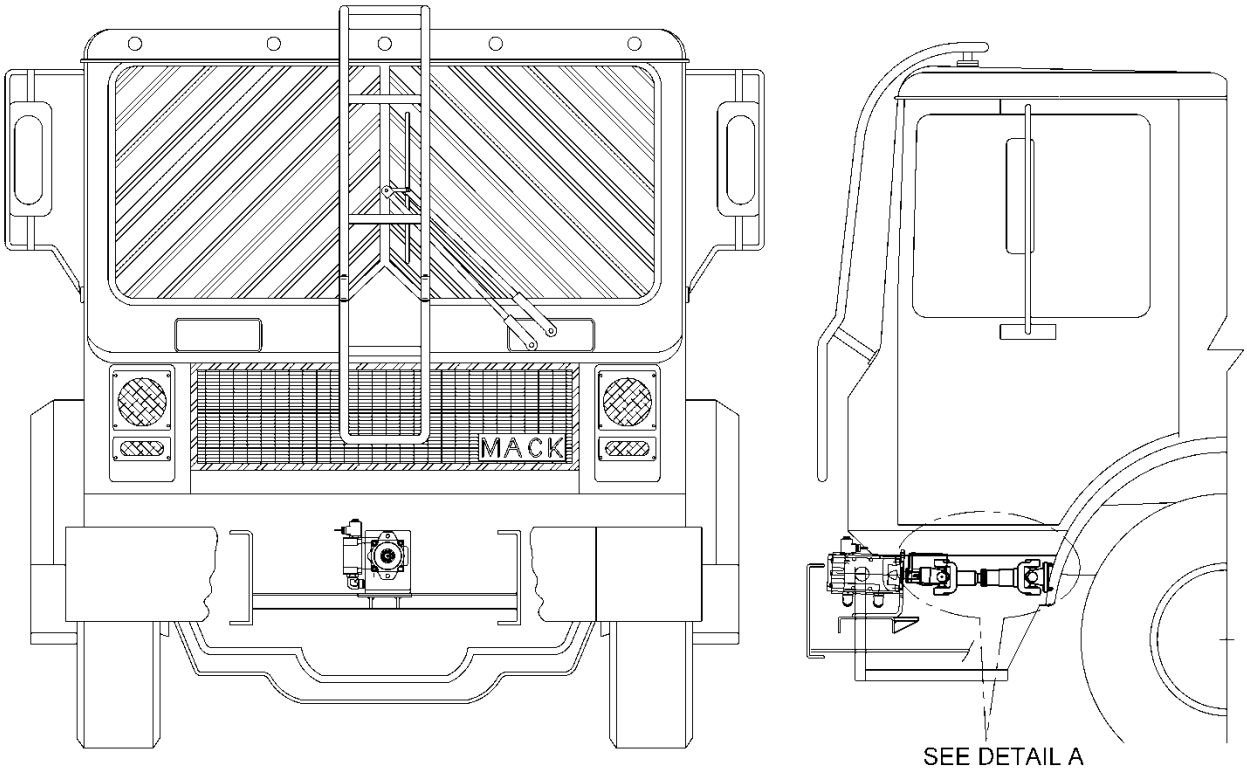
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-5685	KIT, Pump, Mount, Mack LE	-	REF
1	030-0661	ASSEMBLY, Driveline	-	1
2	047-1794	HHCS, 7/16"-20 x 1", Gr.8, Yellow, Zinc Dichromate Plated	-	4
3	055-1391-007	WASHER, Steel, Hardened, 5/8" x 0.121” Thickness, Zinc, Plated	-	20
4	263-0042	WIRE, Safety, Driveline Lock	-	1
5	311-4893-001	BRACKET, Pump, 3/8” Steel	-	1
6	311-4893-003	WELDMENT, Bracket, Pump	-	1
7	FSP071130	HHCS, 1/2”-13 x 2”, Gr. 5, Plated	-	4
8	FSP081330	HHCS, 5/8”-11 x 2”, Gr. 8, Plated	-	10
9	FSP231100	NUT, Lock, 1/2”-13, Gr. 5, Plated	-	4
10	FSP231300	NUT, Lock, 5/8”-11, Gr. 5, Plated	-	10
11	FSP511100	WASHER, Flat, 1/2" Std., Plated	-	8
12	FSP551000	WASHER, Lock, 7/16", Plated	-	4

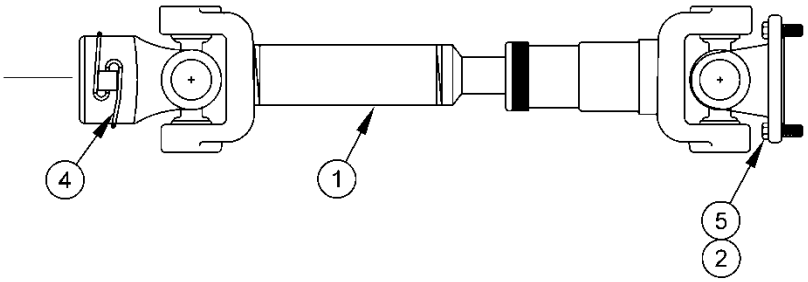
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LE AND MR MACK MOUNT PUMP SUPPLIED INSTALLATION

372-0278-001





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LE AND MR MACK MOUNT PUMP SUPPLIED INSTALLATION

372-0278-001

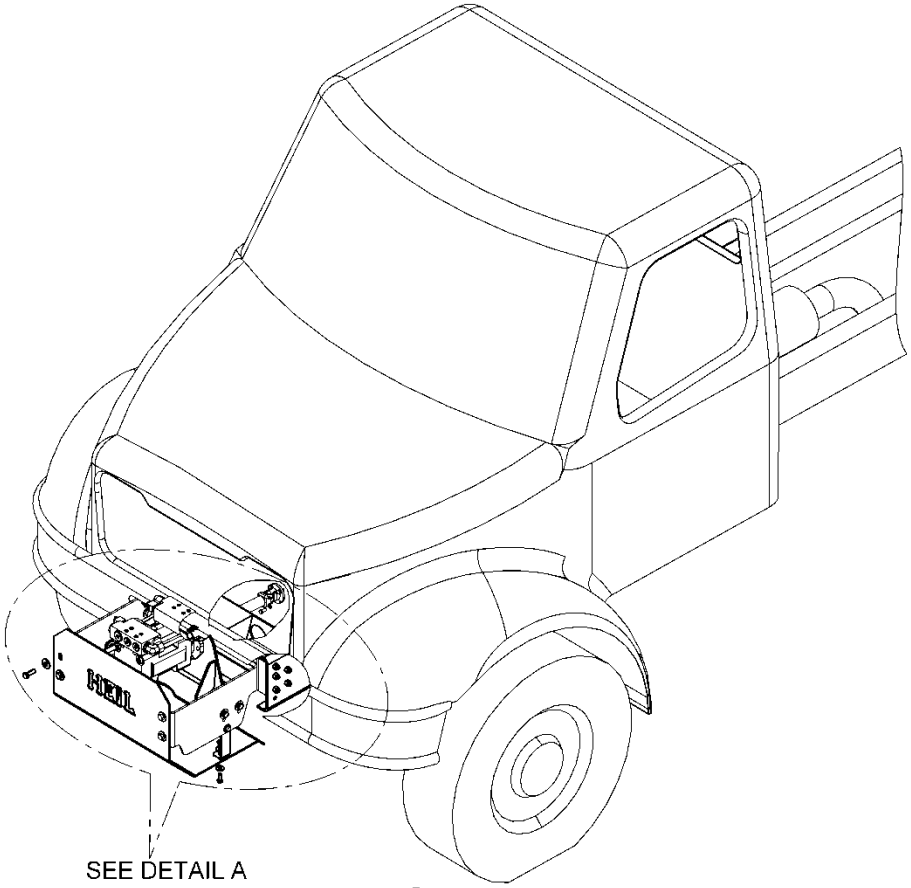
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-0278-001	BRACKET, Pump, Mount, LE and MR Mack	-	REF
1	030-0661	ASSEMBLY, Driveline	-	1
2	047-1794	HHCS, 7/16”-20 x 1", Gr. 8	-	4
-3	NA	-	-	-
4	263-0042	WIRE, Safety, Driveline Lock	-	1
5	FSP551000	WASHER, Lock, 7/16", Plated	-	4

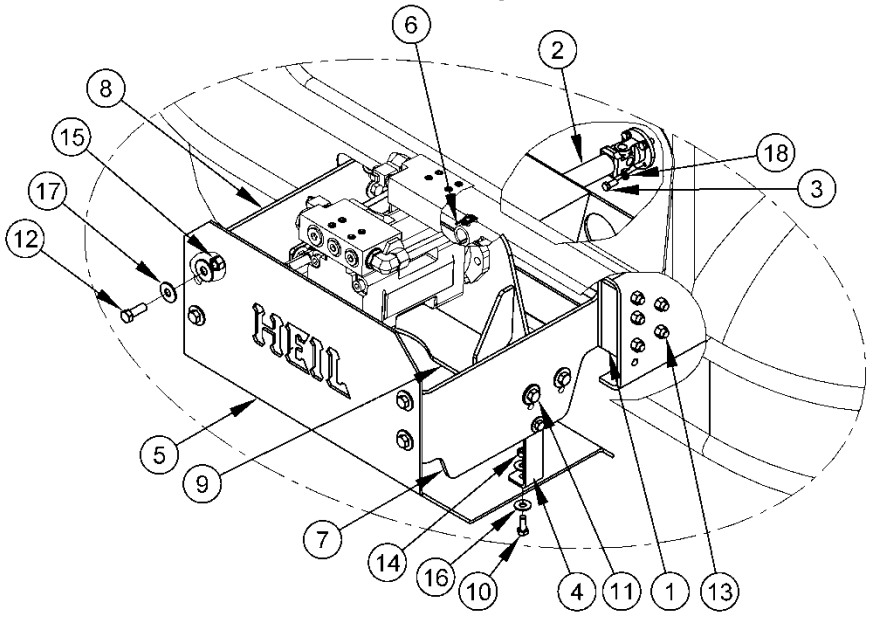
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INTERNATIONAL THRU BUMPER FRONT MOUNT PUMP BRACKET KIT

372-5798





DETAIL A

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INTERNATIONAL THRU BUMPER FRONT MOUNT PUMP BRACKET KIT

372-5798

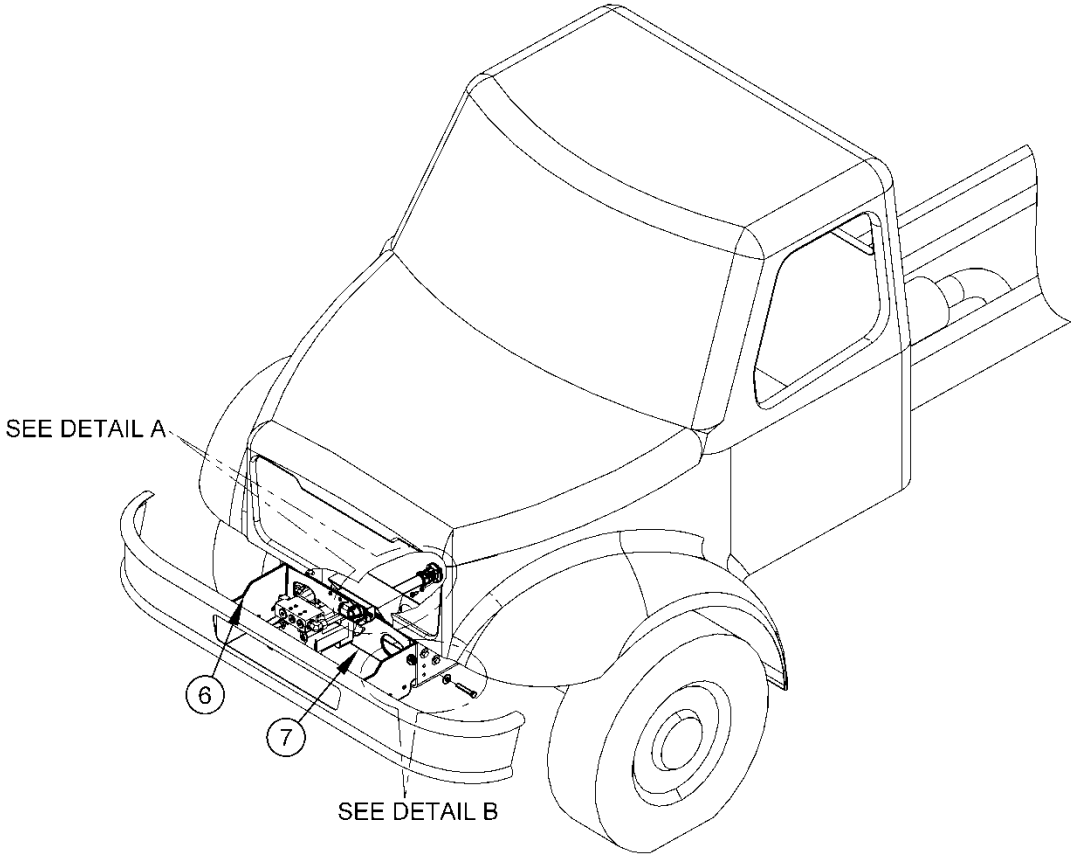
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-5798	KIT, Front Mount Pump Bracket, International Thru Bumper	-	REF
1	015-3351-001	WELDMENT, Pump, Front Mount, Spacer	-	2
2	030-0661	ASSEMBLY, Driveline	-	1
3	047-1794	HHCS, 7/16”-20 x 1", Gr. 8	-	4
4	126-6796-001	BRACE, Pump Guard	-	2
5	211-5511-013	GUARD, Pump, 1/4” HRS, Front Plate	-	1
6	263-0042	WIRE, Safety, Driveline Lock	-	1
7	311-4121	BRACKET, Pump Mount, SS, International	-	1
8	311-4122	BRACKET, Pump Mount, CS, International	-	1
9	311-4894-004	BRACKET, Pump Weldment, International (Item Welded)	-	1
10	FSP071122	HHCS, 1/2’’-13 x 1-1/4”, Gr. 5, Plated	-	2
11	FSP071124	HHCS, 1/2’’-13 x 1-1/2”, Gr. 5, Plated	-	2
12	FSP071326	HHCS, 5/8”-11 x 1-3/4”, Gr. 5, Plated	-	8
13	FSP071352	HHCS, 5/8”-11 x 4-1/4”, Gr. 5, Plated	-	10
14	FSP231100	NUT, Lock, 1/2”-13, Gr. 5, Plated	-	4
15	FSP231300	NUT, Lock, 5/8”-11, Gr. 5, Plated	-	18
16	FSP511100	WASHER, Flat, 1/2" Std., Plated	-	6
17	FSP511300	WASHER, Flat, 5/8” Std., Plated	-	26
18	FSP551000	WASHER, Lock, 7/16", Plated	-	4

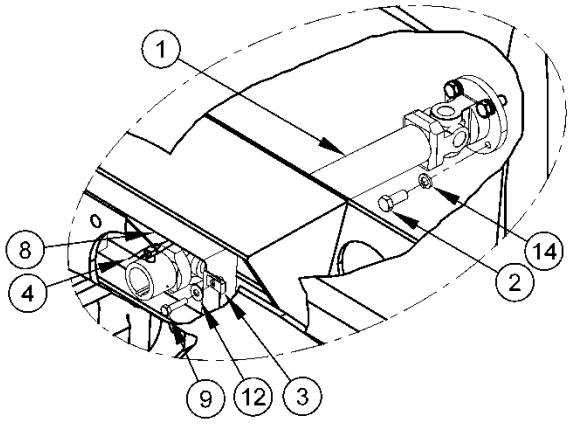
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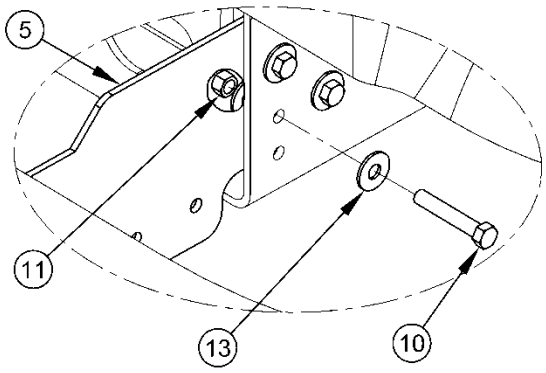
INTERNATIONAL WITH BUMPER EXTENSION FRONT MOUNT PUMP BRACKET KIT

372-5798-001





DETAIL A



DETAIL B

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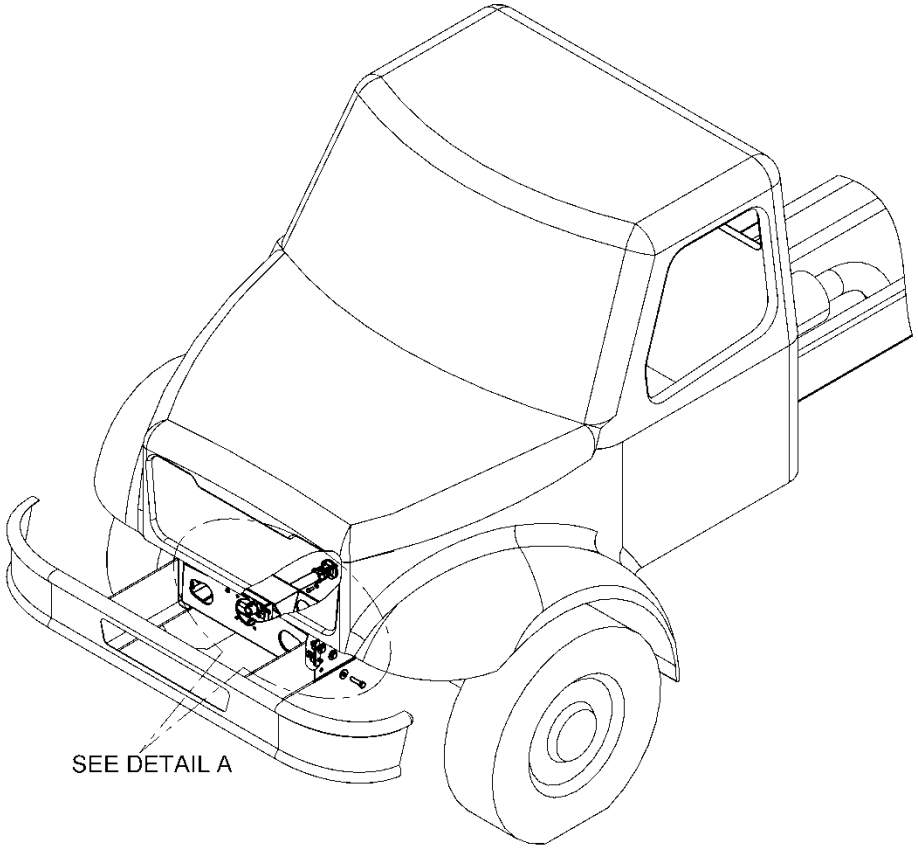
INTERNATIONAL WITH BUMPER EXTENSION FRONT MOUNT PUMP BRACKET KIT

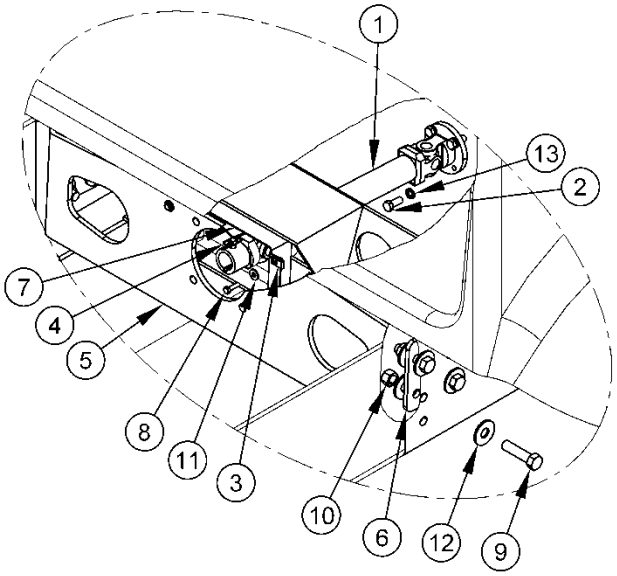
372-5798-001

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-5798-001	KIT, Front Mount Pump Bracket, International with Bumper Extension	-	REF
1	030-0661	ASSEMBLY, Driveline	-	1
2	047-1794	HHCS, 7/16”-20 x 1", Gr. 8	-	4
3	047-2608	NUT, Spring, 1/4"-20, Black	-	2
4	263-0042	WIRE, Safety, Driveline Lock	-	1
5	311-4374-002	BRACKET, Front Mount, CS	-	1
6	311-4375-002	BRACKET, Front Mount, SS	-	1
7	311-4894	BRACKET, Pump, Front Mount	-	1
8	311-4894-005	GUARD, Driveline	-	1
9	FSP070721	HHCS, 1/4"-20 x 1-1/8”, Gr. 5, Plated	-	2
10	FSP081346	HHCS, 5/8”-11 x 3-3/4”, Gr. 8, Plated	-	8
11	FSP231300	NUT, Lock, 5/8”-11, Gr. 5, Plated	-	8
12	FSP510700	WASHER, Flat, 1/4" Std., Plated	-	2
13	FSP511300	WASHER, Flat, 5/8” Std., Plated	-	16
14	FSP551000	WASHER, Lock, 7/16", Plated	-	4

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INTERNATIONAL WITH EXTENSION FRAME RAILS
FRONT MOUNT PUMP BRACKET KIT
372-5798-002





DETAIL A

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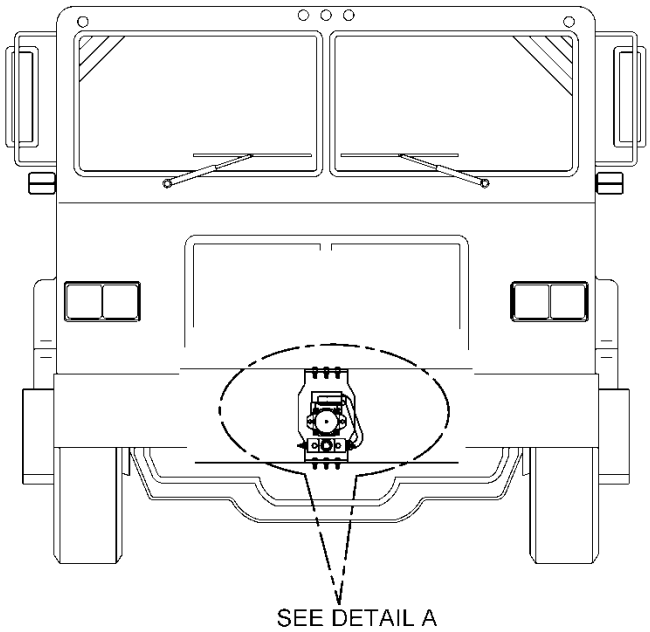
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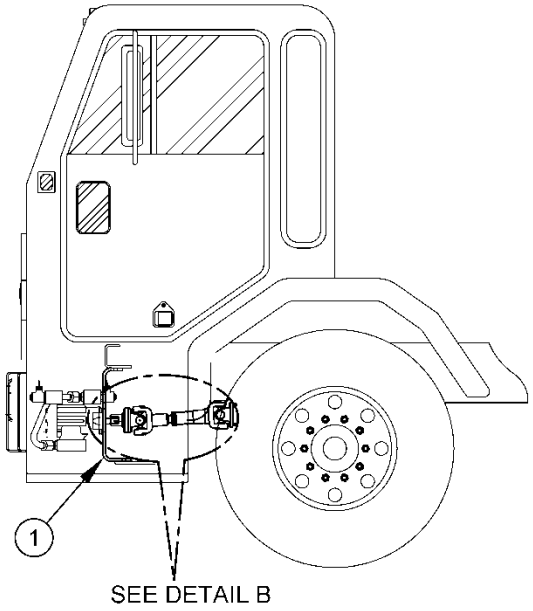
Rapid Rail® Co-Collector
INTERNATIONAL WITH EXTENSION FRAME RAILS
FRONT MOUNT PUMP BRACKET KIT
372-5798-002

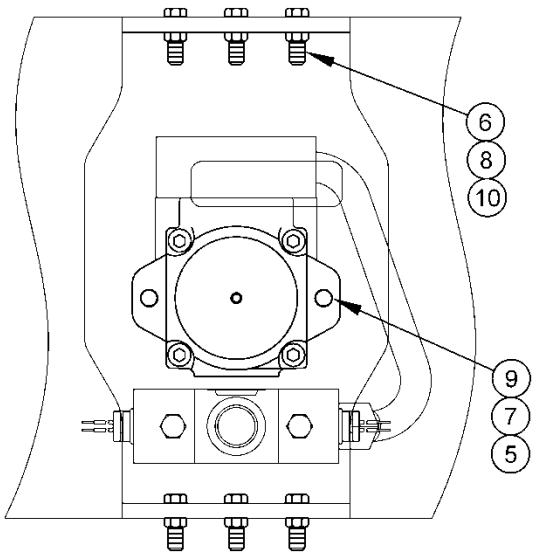
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-5798-002	KIT, Front Mount Pump Bracket, International w/Extension Frame Rails	-	REF
1	030-0661	ASSEMBLY, Driveline	-	1
2	047-1794	HHCS, 7/16”-20 x 1", Gr. 8	-	4
3	047-2608	NUT, Spring, 1/4"-20, Black	-	2
4	263-0042	WIRE, Safety, Driveline Lock	-	1
5	311-4894	BRACKET, Pump, Front Mount	-	1
6	311-4374-002	BRACKET, Front Mount, CS	-	1
7	311-4375-002	BRACKET, Front Mount, SS	-	1
8	FSP070720	HHCS, 1/4”-20 x 1”, Gr. 5, Plated	-	2
9	FSP081334	HHCS, 5/8”-11 x 2-1/2”, Gr. 8, Plated	-	8
10	FSP231300	NUT, Lock, 5/8”-11, Gr. 5, Plated	-	8
11	FSP510700	WASHER, Flat, 1/4" Std., Plated	-	2
12	FSP511300	WASHER, Flat, 5/8” Std., Plated	-	16
13	FSP551000	WASHER, Lock, 7/16", Plated	-	4

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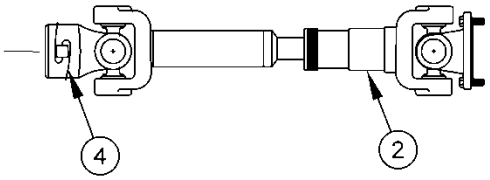
Rapid Rail® Co-Collector
PUMP MOUNT KIT
372-1577







DETAIL A



DETAIL B

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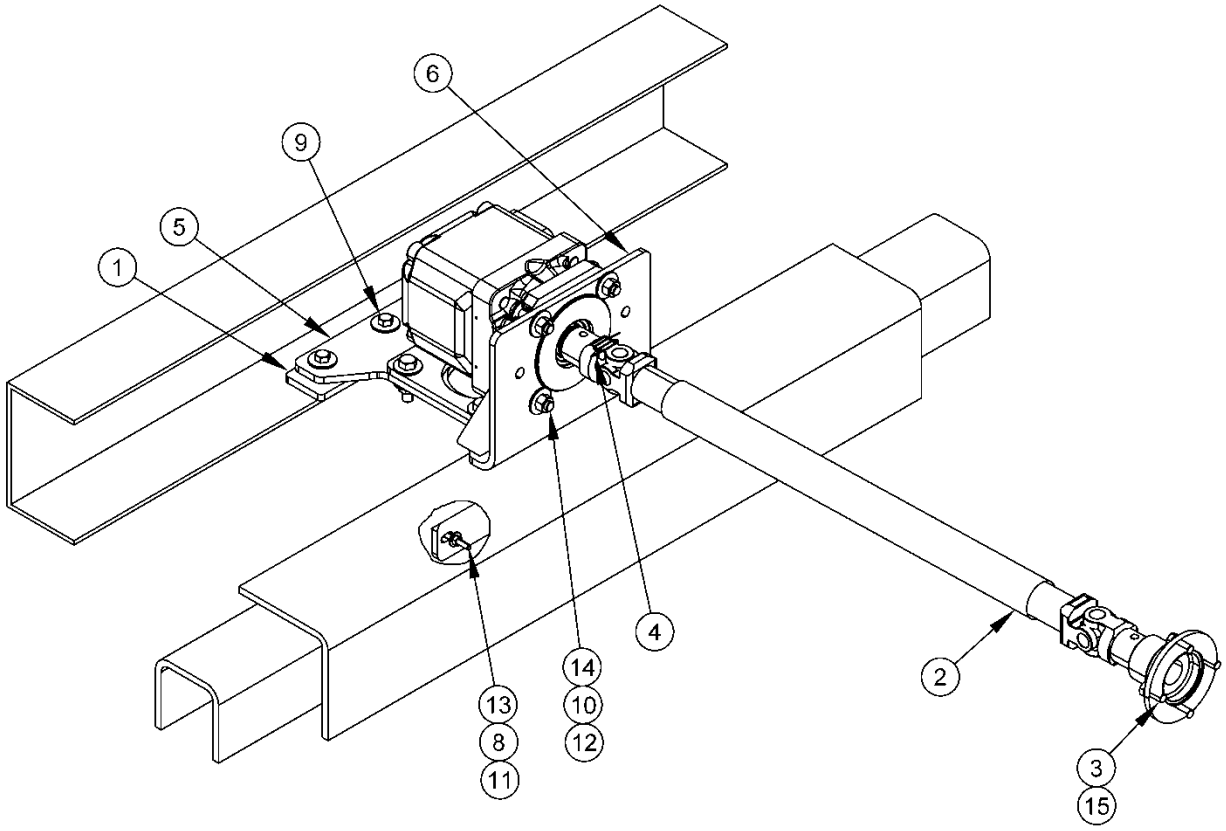
PUMP MOUNT KIT

372-1577

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-1577	KIT, Pump Mount	-	REF
1	311-2572	BRACKET, Pump, 1/2"	-	1
2	030-0661	ASSEMBLY, Driveline	-	1
-3	NA	-	-	-
4	263-0042	WIRE, Safety, Driveline Lock	-	1
5	FSP071130	HHCS, 1/2”-13 x 2”, Gr. 5, Plated	-	2
6	FSP071330	HHCS, 5/8"-11 x 2”, Gr. 5, Plated	-	6
7	FSP231100	NUT, Lock, 1/2”-13, Gr. 5, Plated	-	2
8	FSP231300	NUT, Lock, 5/8”-11, Gr. 5, Plated	-	6
9	FSP511100	WASHER, Flat, 1/2" Std., Plated	-	2
10	FSP511300	WASHER, Flat, 5/8” Std., Plated	-	6
-11	701-7398	INSTALLATION, Driveline, Front Mount	-	1

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AUTOCAR ACX C-FLANGE FRONT MOUNT PUMP KIT
372-5361-001



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AUTOCAR ACX C-FLANGE FRONT MOUNT PUMP KIT

372-5361-001

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-5361-001	KIT, Pump, Front Mount, C-Flange, Autocar ACX	-	REF
1	015-3390	SPACER, Plate	-	2
2	030-0661	ASSEMBLY, Driveline	-	1
3	047-1794	HHCS, 7/16"-20 x 1", Gr.8, Yellow, Zinc Dichromate Plated	-	4
4	263-0042	WIRE, Safety, Driveline Lock	-	1
5	311-4725	BRACKET, Pump, Front Mount, Autocar ACX (Depends on Pump)	-	1
6	311-4725-003	BRACKET, Pump, Front Mount, Autocar ACX (Depends on Pump)	-	1
8	FSP070750	HHCS, 1/4”-20 x 4” Gr. 5, Plated	-	4
9	FSP071032	HHCS, 7/16”-14 x 2-1/4”, Gr. 5, Plated	-	3
10	FSP071130	HHCS, 1/2”-13 x 2”, Gr. 5, Plated	-	10
11	FSP230700	NUT, Lock, 1/4”-20, Gr. 5, Plated	-	4
12	FSP231100	NUT, Lock, 1/2”-13, Gr. 5, Plated	-	13
13	FSP510700	WASHER, Flat, 1/4" Std., Plated	-	8
14	FSP511100	WASHER, Flat, 1/2" Std., Plated	-	26
15	FSP551000	WASHER, Lock, 7/16", Plated	-	4

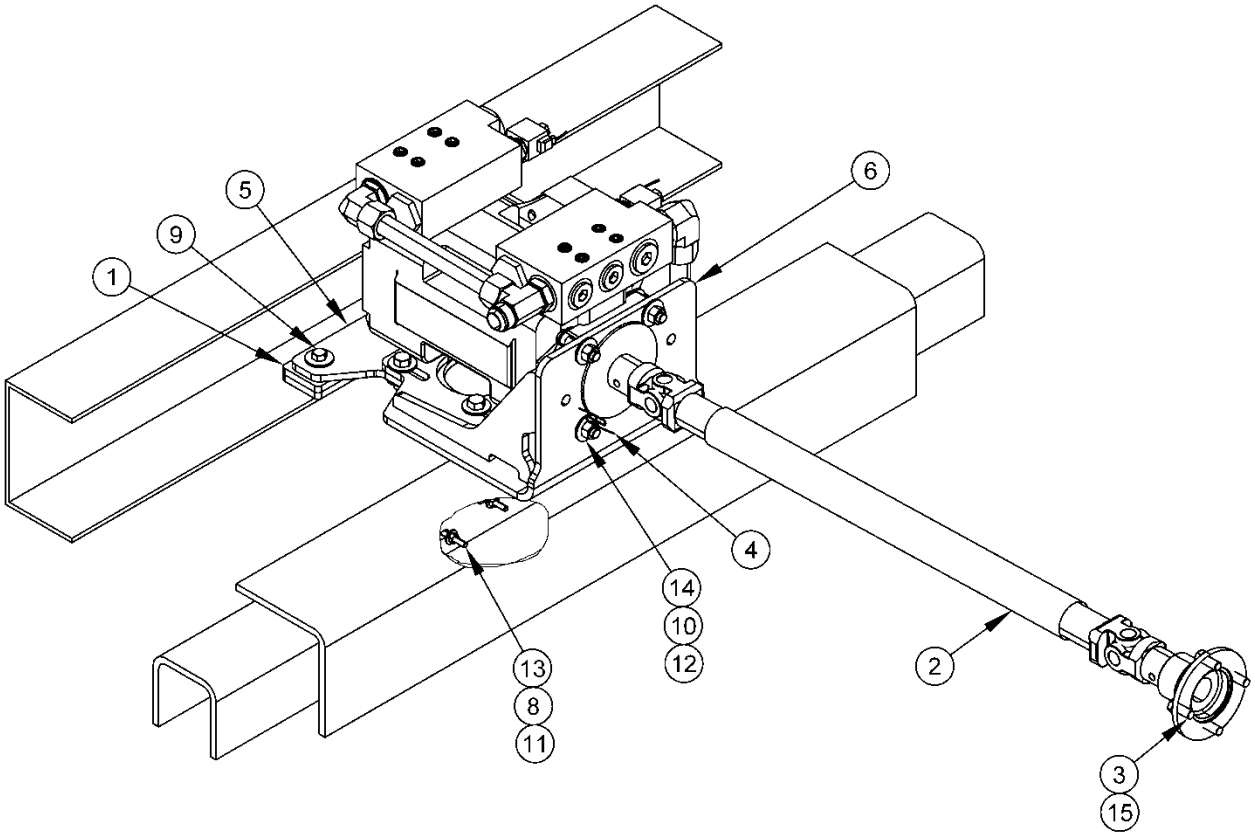
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AUTOCAR ACX C-FLANGE T7DD FRONT MOUNT PUMP KIT

372-5361-002



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AUTOCAR ACX C-FLANGE T7DD FRONT MOUNT PUMP KIT

372-5361-002

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-5361-002	KIT, Pump, Front Mount, C Flange T7DD, Autocar ACX	-	REF
1	015-3390	SPACER, Plate	-	2
2	030-0661	ASSEMBLY, Driveline	-	1
3	047-1794	HHCS, 7/16"-20 x 1", Gr.8, Yellow, Zinc Dichromate Plated	-	4
4	263-0042	WIRE, Safety, Driveline Lock	-	1
5	311-4725	BRACKET, Pump, Front Mount, Autocar ACX (Depends on Pump)	-	1
6	311-4725-001	BRACKET, Pump, Front Mount, Autocar ACX (Depends on Pump)	-	1
8	FSP070750	HHCS, 1/4”-20 x 4” Gr. 5, Plated	-	4
9	FSP071032	HHCS, 7/16”-14 x 2-1/4”, Gr. 5, Plated	-	3
10	FSP071130	HHCS, 1/2”-13 x 2”, Gr. 5, Plated	-	10
11	FSP230700	NUT, Lock, 1/4”-20, Gr. 5, Plated	-	4
12	FSP231100	NUT, Lock, 1/2”-13, Gr. 5, Plated	-	13
13	FSP510700	WASHER, Flat, 1/4" Std., Plated	-	8
14	FSP511100	WASHER, Flat, 1/2" Std., Plated	-	26
15	FSP551000	WASHER, Lock, 7/16", Plated	-	4

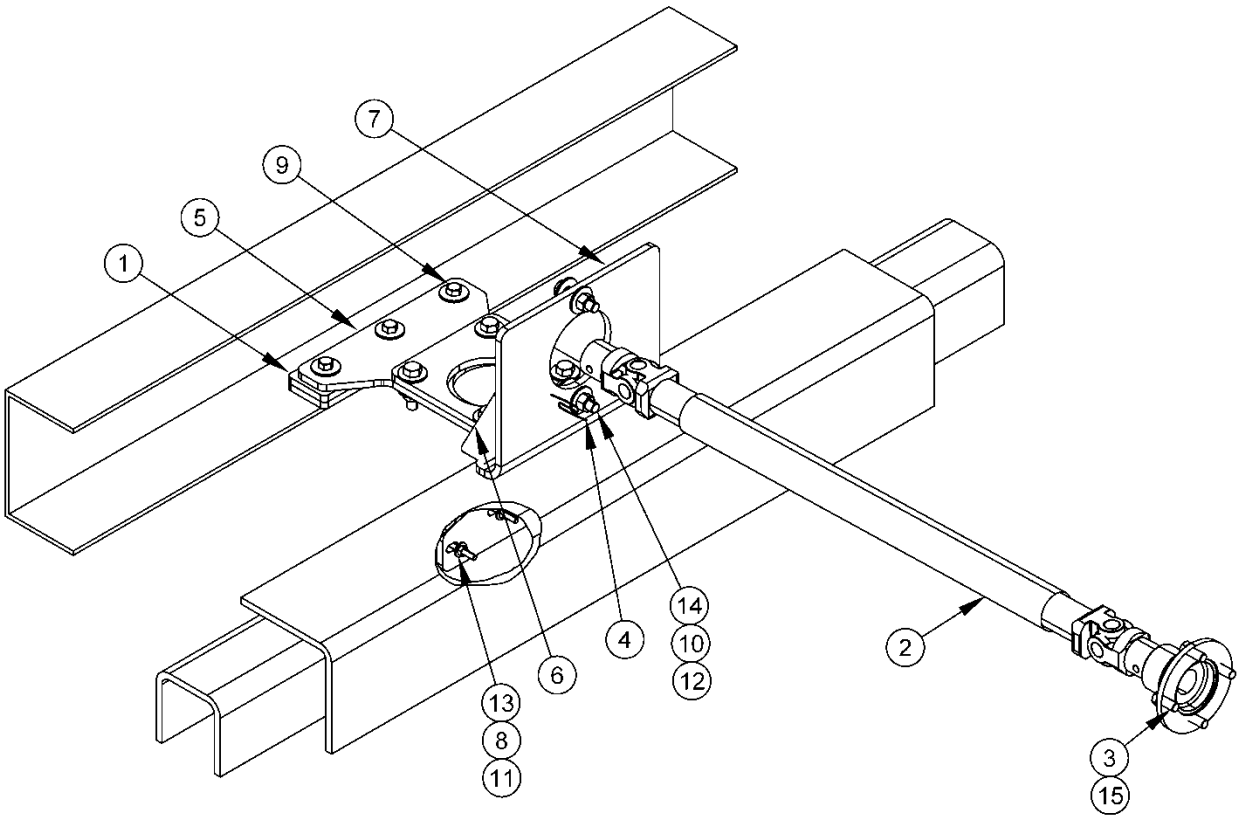
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AUTOCAR ACX B-FLANGE FRONT MOUNT PUMP KIT

372-5361-003



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AUTOCAR ACX B-FLANGE FRONT MOUNT PUMP KIT

372-5361-003

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-5361-003	KIT, Pump, Front Mount, B Flange, Autocar ACX	-	REF
1	015-3390	SPACER, Plate	-	2
2	030-0661	ASSEMBLY, Driveline	-	1
3	047-1794	HHCS, 7/16"-20 x 1", Gr.8, Yellow, Zinc Dichromate Plated	-	4
4	263-0042	WIRE, Safety, Driveline Lock	-	1
5	311-4725	BRACKET, Pump, Front Mount, Autocar ACX (Depends on Pump)	-	1
7	311-4725-005	BRACKET, Pump, Front Mount, Autocar ACX (Depends on Pump)	-	1
8	FSP070750	HHCS, 1/4”-20 x 4” Gr. 5, Plated	-	4
9	FSP071032	HHCS, 7/16”-14 x 2-1/4”, Gr. 5, Plated	-	3
10	FSP071130	HHCS, 1/2”-13 x 2”, Gr. 5, Plated	-	10
11	FSP230700	NUT, Lock, 1/4”-20, Gr. 5, Plated	-	4
12	FSP231100	NUT, Lock, 1/2”-13, Gr. 5, Plated	-	13
13	FSP510700	WASHER, Flat, 1/4" Std., Plated	-	8
14	FSP511100	WASHER, Flat, 1/2" Std., Plated	-	26
15	FSP551000	WASHER, Lock, 7/16", Plated	-	4

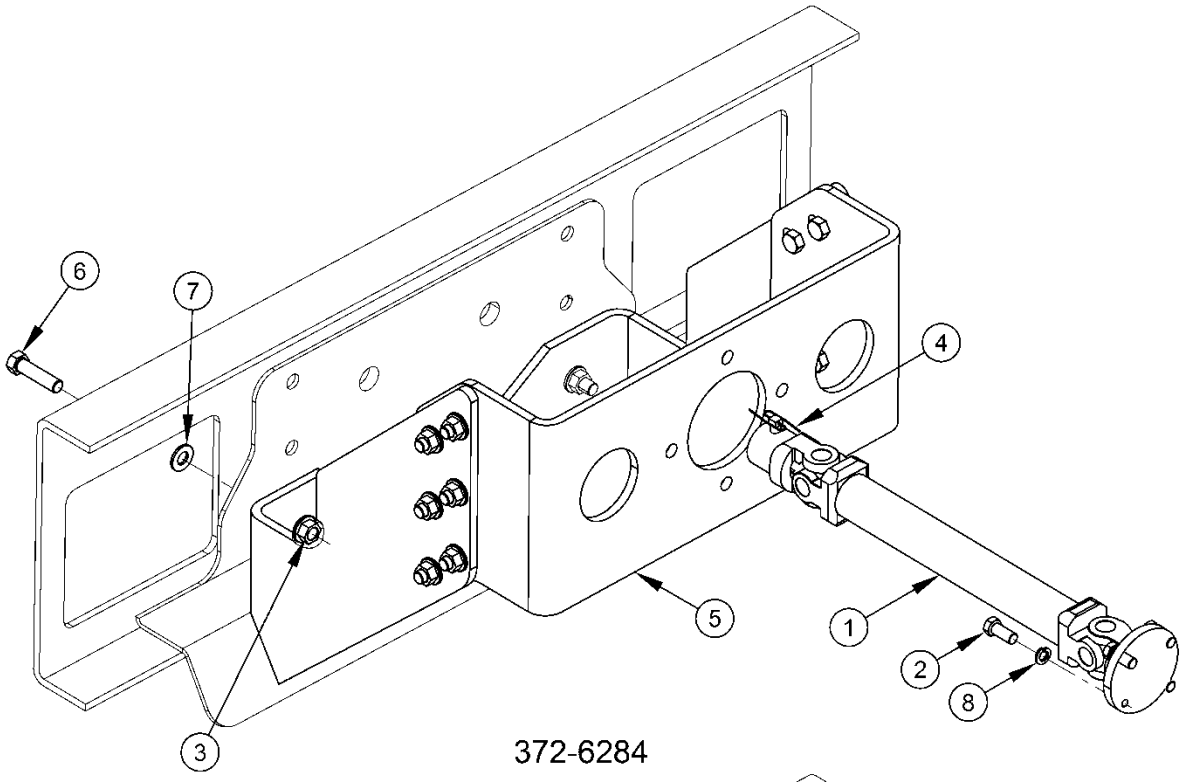
Note: Item 6 is welded.

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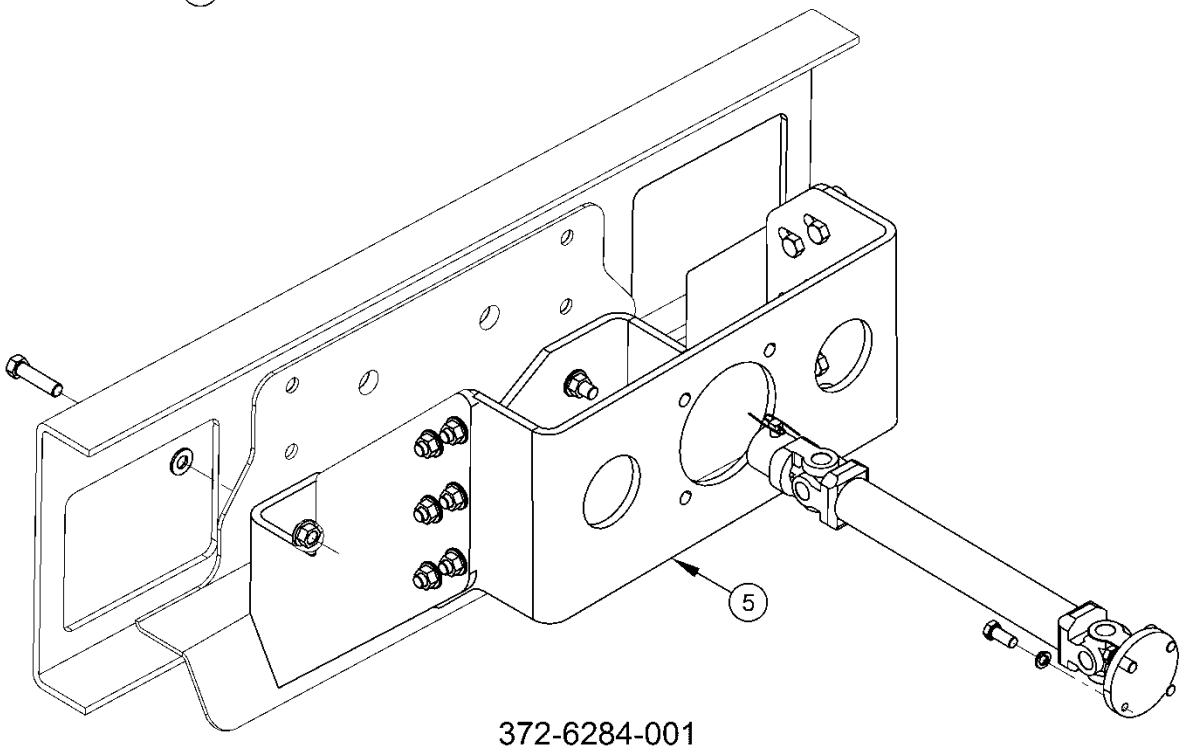
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CONDOR FRONT MOUNT 2 AND 4 BOLT PUMP BRACKET KITS

372-6284, 372-6284-001



372-6284



372-6284-001

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CONDOR FRONT MOUNT 2 AND 4 BOLT PUMP BRACKET KITS

372-6284, 372-6284-001

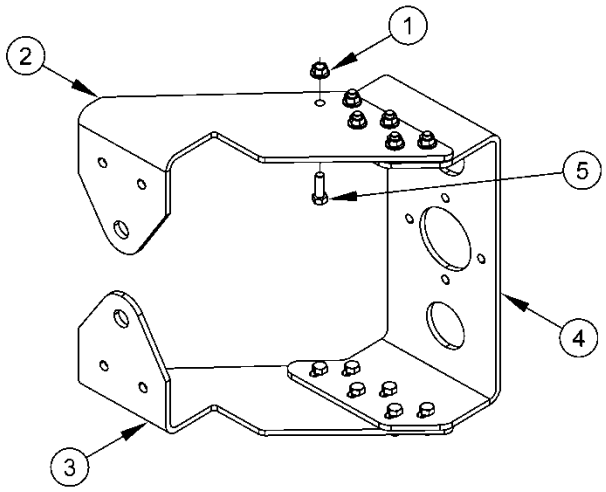
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-6284	KIT, Bracket, Pump, 2 Bolt, Front Mount, Condor	A	REF
-	372-6284-001	KIT, Bracket, Pump, 4 Bolt, Front Mount, Condor	B	REF
1	030-0661	ASSEMBLY, Driveline	-	1
2	047-1794	HHCS, 7/16”-20 x 1", Gr. 8	-	4
3	047-2513-005	NUT, Flange, 1/2"-13	-	4
4	263-0042	WIRE, Safety, Driveline Lock	-	1
5	311-5237	KIT, Front Mount Pump Bracket, Condor, 2 Bolt (See Pg. 2145)	A	1
-5a	311-5237-001	KIT, Front Mount Pump Bracket, Condor, 4 Bolt (See Pg. 2145)	B	1
6	FSP081130	HHCS, 1/2"-13 x 2”, Gr. 8, Plated	-	4
7	FSP521100	WASHER, Flat, 1/2", SAE, Plated	-	4
8	FSP551000	WASHER, Lock, 7/16", Plated	-	4

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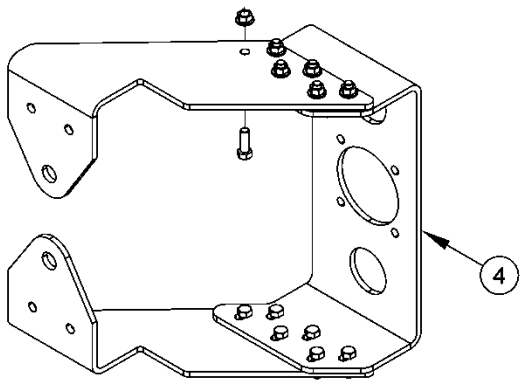
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CONDOR FRONT MOUNT 2 AND 4 BOLT PUMP BRACKET KITS

311-5237, 311-5237-001



2 BOLT PUMP BRACKET KIT



4 BOLT PUMP BRACKET KIT

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CONDOR FRONT MOUNT 2 AND 4 BOLT PUMP BRACKET KITS

311-5237, 311-5237-001

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	311-5237	KIT, Bracket, Pump, 2 Bolt, Front Mount, Condor	A	REF
-	311-5237-001	KIT, Bracket, Pump, 4 Bolt, Front Mount, Condor	B	REF
1	047-2513-005	NUT, Flange, 1/2"-13	-	12
2	234-3060-002	BRACKET, Mtg., Side Plate	-	1
3	234-3060-003	PLATE, Side, Mtg.	-	1
4	311-5237-002	BRACKET, Pump, 2 Bolt, Front Mount, Condor	A	1
-4a	311-5237-003	BRACKET, Pump, 4 Bolt, Front Mount, Condor	B	1
5	FSP071124	HHCS, 1/2"-13 x 1-1/2”, Gr. 5, Plated	-	4

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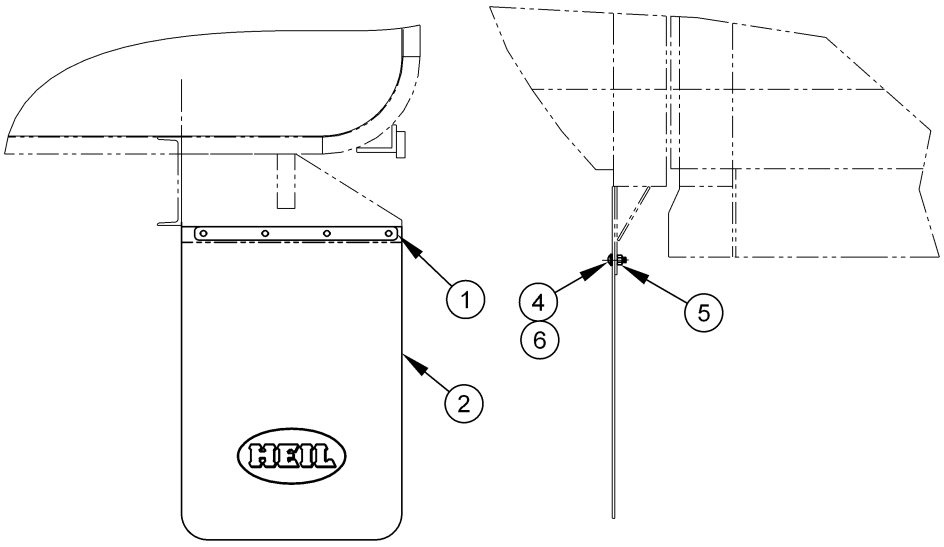
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MUDFLAP KITS

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Rapid Rail® Co-Collector
MUDFLAP INSTALLATION
272-8684



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Rapid Rail® Co-Collector
MUDFLAP INSTALLATION
272-8684

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	272-8684	INSTALLATION, Mudflap	-	REF
1	021-2732	BAR, Mudflap, 23-3/4”	-	2
2	035-2650-001	MUDFLAP, 24" x 36"	-	2
4	FS070920	HHCS, 3/8”-16 x 1”, Gr. 5	-	8
5	FS230900	NUT, Lock, 3/8”-16, Gr. 5	-	8
6	FS510900	WASHER, Flat, 3/8”, Std., Plain	-	16

Note: Item 3 is Installation Drawing.

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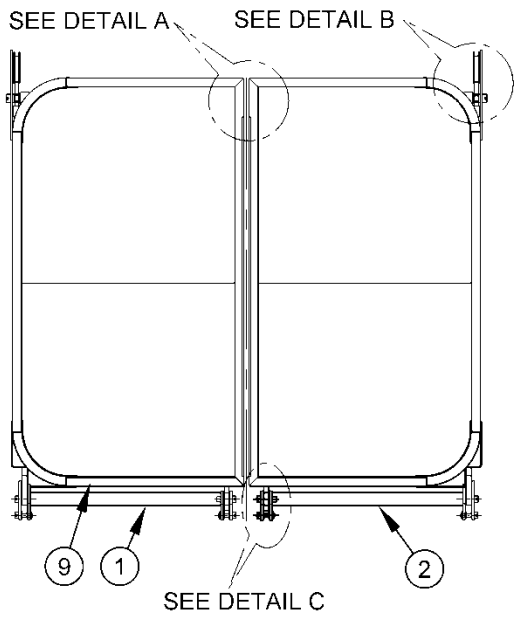
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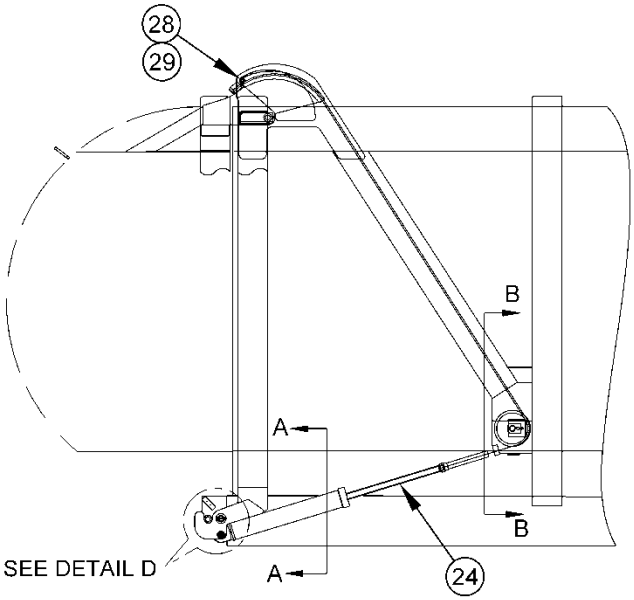
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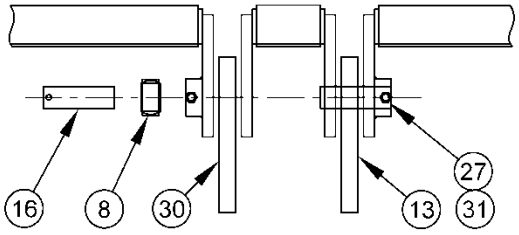
TRIM KITS

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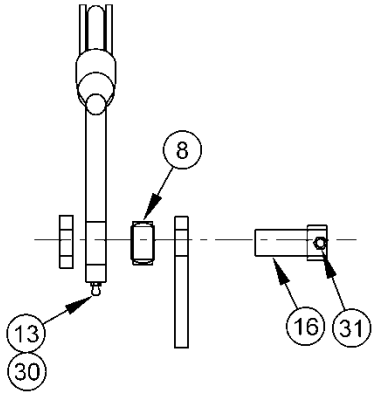
Rapid Rail® Co-Collector
LONG BODY TRIM KIT
372-0761



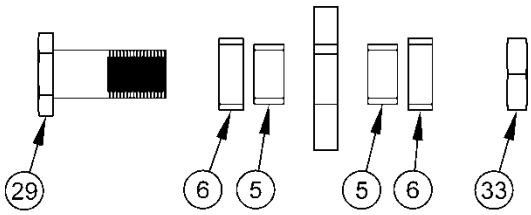




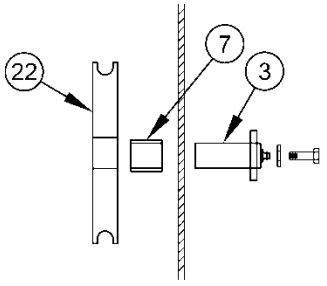
DETAIL A



DETAIL B



DETAIL C



VIEW A A

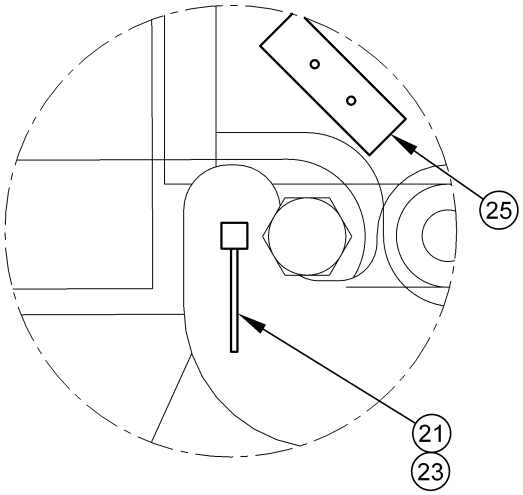
SHEET 1 OF 2

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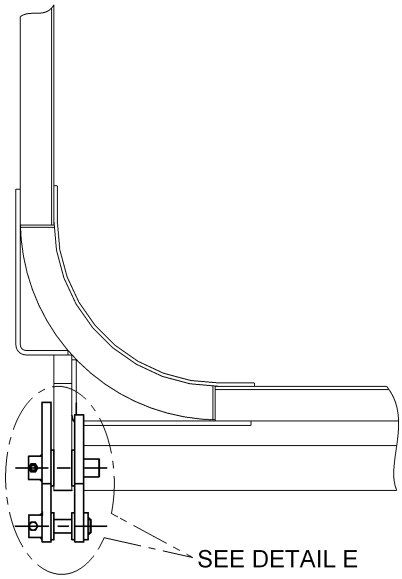
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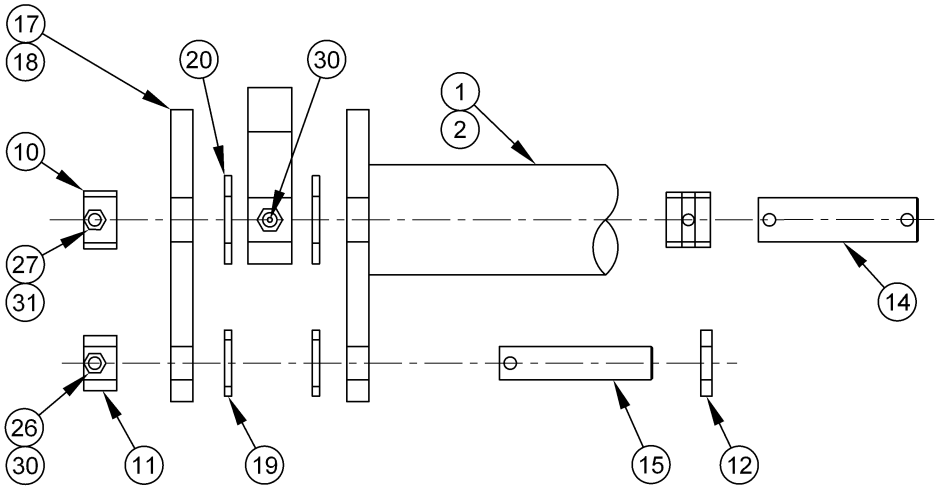
Rapid Rail® Co-Collector
LONG BODY TRIM KIT
372-0761



DETAIL D



VIEW B B



DETAIL E

SHEET 2 OF 2

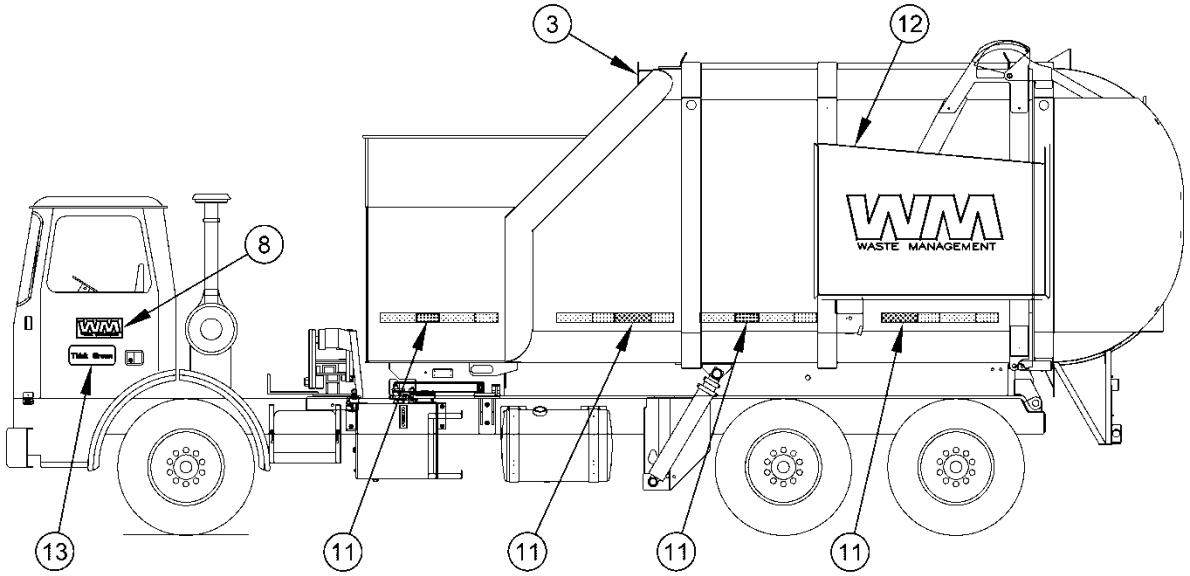
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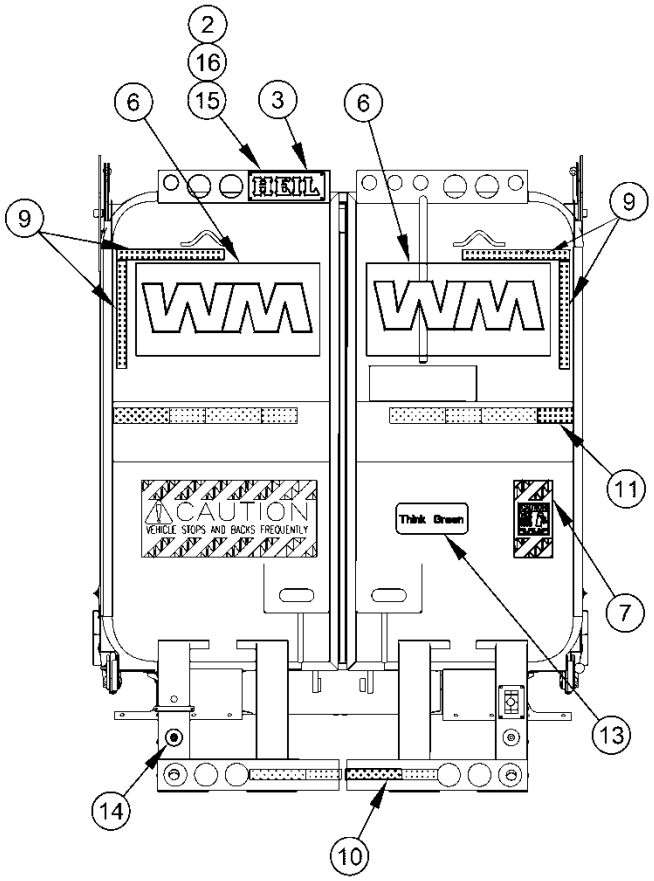
Rapid Rail® Co-Collector
LONG BODY TRIM KIT
372-0761

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-0761	KIT, Trim, Long Body	-	REF
1	005-4135	HINGE, Tailgate, SS	-	1
2	005-4136	HINGE, Tailgate, CS	-	1
3	048-6235	PIN, Sheave	-	2
-4	001-6405	CYLINDER, Tailgate (See Section 5)	-	REF
5	003-4576-001	RACES, Inner, Hardened Steel, 1.26”	-	8
6	003-4576-002	RACES, Inner, Hardened Steel, 1”	-	8
7	003-4576-003	RACES, Inner, Hardened Steel, 1”	-	2
8	003-4806	BEARING, Spherical, 1”	-	4
9	022-3752-130	TUBING, Tailgate, 1-1/4”	-	1
10	040-2219	COLLAR, Retaining, 1”	-	4
11	040-2497	COLLAR, Retaining, 3/4”	-	4
12	040-2499	PIN, Retainer, T/G Latch, 1/4"	-	4
13	047-2310-001	SET SCREW, 3/8”-16	-	4
14	048-6023-001	PIN, 1”	-	4
15	048-6024-001	PIN, 3/4"	-	4
16	048-6236	PIN, 1”	-	4
17	053-2213	LATCH, Outer	-	2
18	053-2215	LATCH, Inner	-	2
19	055-1391-008	WASHER, Hardened, 3/4"	-	8
20	055-1391-010	WASHER, Steel, Hardened, 1" x 0.160” Thickness, Zinc, Plated	-	8
21	055-1459	DISC, Target, Tailgate, 2” Dia., 10 Ga., HRS	-	2
22	072-1962	SHEAVE, 7-1/2” Dia., Rd., HR	-	2
23	080-1631	STOP, Striker, Tailgate Switch, 1/2" SQ, HR Bar	-	2
24	097-0636	CABLE, Tailgate	-	2
25	211-2030	BRACKET, Switch, Limit	-	2
26	FS070724	HHCS, 1/4" x 1-1/2”, Gr. 5	-	4
27	FS070726	HHCS, 1/4"-20 x 1-3/4”, Gr. 5	-	8
28	FS071130	HHCS, 1/2"-13 x 2”, Gr. 5	-	2
29	FS102060	HHCS, 1” x 5”, Gr. 5	-	4
30	FS190700	FITTING, Grease, Str., 1/4"	-	8
31	FS230700	NUT, Lock, 1/4”-20, Gr. 5	-	12
-32	FS231100	NUT, Lock, 1/2”, Gr. 5	-	2
33	FS242000	NUT, Lock, 1”-12, Gr. 5	-	4

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WASTE MANAGEMENT TRIM/DECAL KIT
372-3239-001





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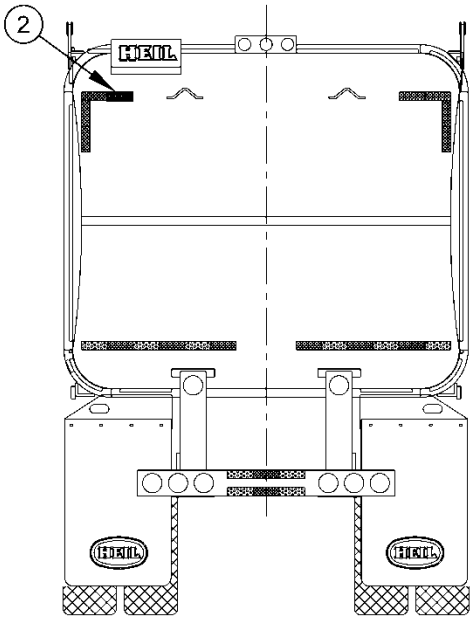
WASTE MANAGEMENT TRIM/DECAL KIT

372-3239-001

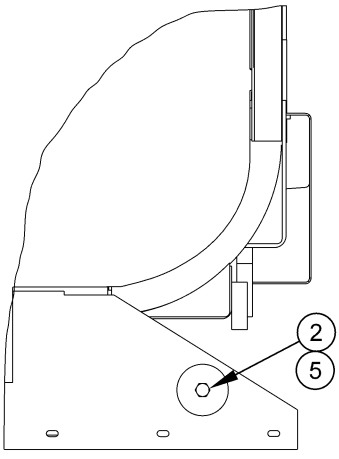
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-3239-001	KIT, Decal, Trim, Waste Management	-	REF
-1	047-2147	TACK, Metal, 1/4"	-	4
2	047-2192	NUT, Well, 1/4"-20	-	8
3	212-1343	NAME PLATE, Heil	-	2
-4	212-1850	KIT, Decal (See Pg. 2165)	-	1
-5	212-1883	PLATE, Serial No., Body	-	1
6	212-2675	DECAL, Rear, Waste Management	-	2
7	212-2676	DECAL, Rear Caution	-	1
8	212-2417	DECAL, Door, Waste Management	-	2
9	212-2419-021	TAPE, Reflective, White, 2” x 21”	-	4
10	212-2420-072	TAPE, Reflective, Red, 2” x 72”	-	1
11	212-2422-040	TAPE, Reflective, Red and White, 3” x 40”	-	8
12	212-2423	LOGO, Sign, Aluminum, Waste Management, 48” x 72”	-	2
13	212-3017	DECAL, Think Green	-	3
14	272-8685	INSTALLATION, Reflector (See Pg. 2159)	-	1
15	FSP070720	HHCS, 1/4”-20 x 1", Gr. 5, Plated	-	8
16	FSP540700	WASHER, Lock, 1/4", Plain	-	8

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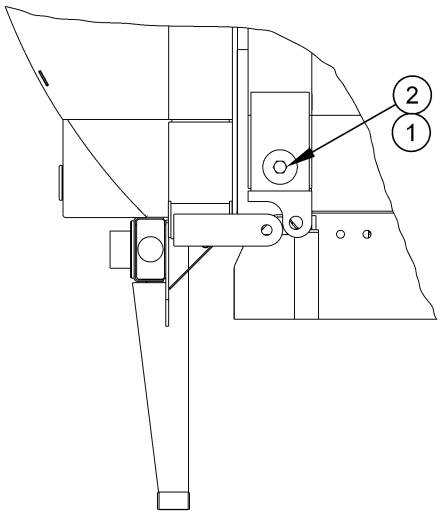
Rapid Rail® Co-Collector
REFLECTIVE TAPE KIT
212-1855



REFLECTOR INSTALLATION
272-8685



REAR MUD FLAP BRACKET



REAR BODY BOLSTER

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REFLECTIVE TAPE KIT

212-1855

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	212-1855	KIT, Reflective Tape	-	REF
-1	212-2420	TAPE, Reflective, Red and White	-	37’
2	212-2419	TAPE, Reflective, White	-	4’

REFLECTOR INSTALLATION

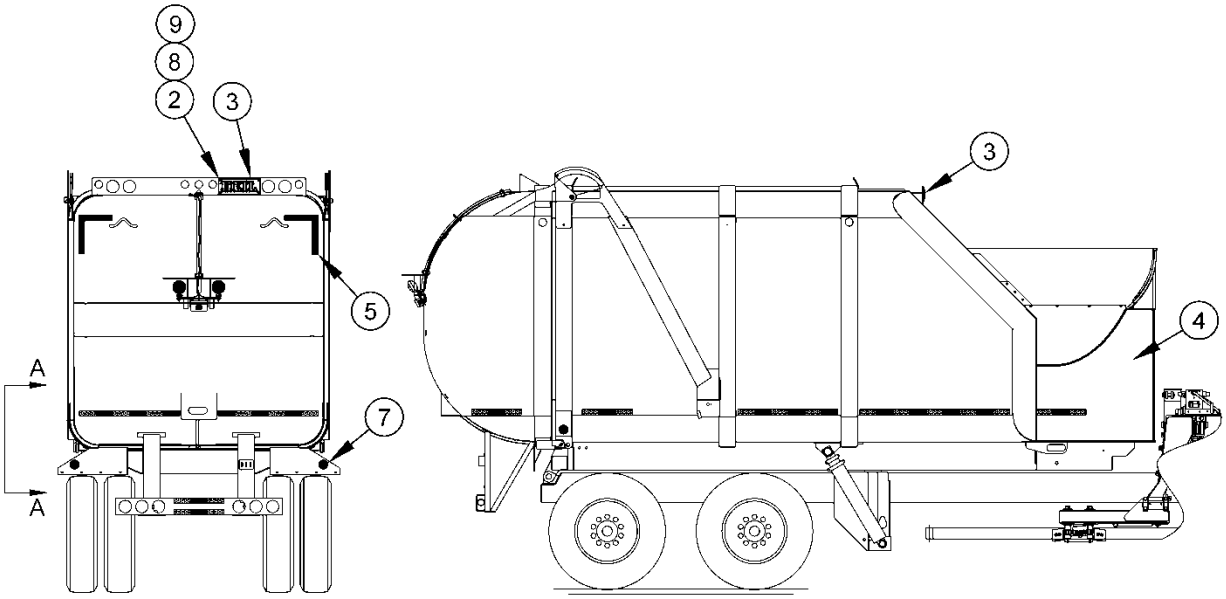
272-8685

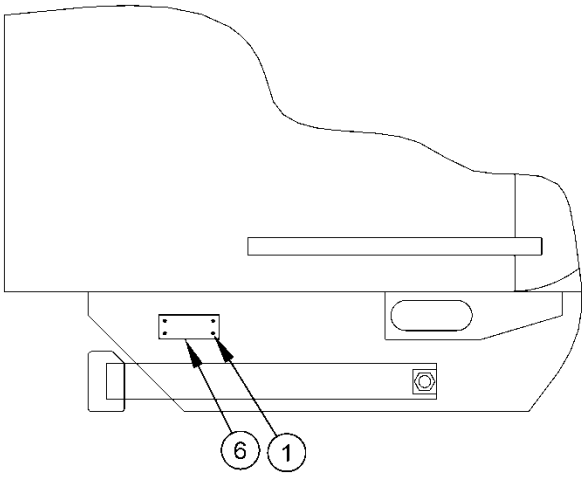
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	272-8685	INSTALLATION, Reflector	-	REF
1	047-2151-006	SCREW, Tek, #10-16 x 3/4”	-	2
2	115-0757	REFLECTOR, Red, 3-1/4" Dia.	-	4
-4	FS280400	NUT, Hex, 1/8”, Plain	-	2
5	FS410415	SCREW, Mach., Flat Hd., 1/8” x 3/4"	-	2

Note: Item 3 deleted.

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Rapid Rail® Co-Collector
TRIM KIT
372-3651





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TRIM KIT

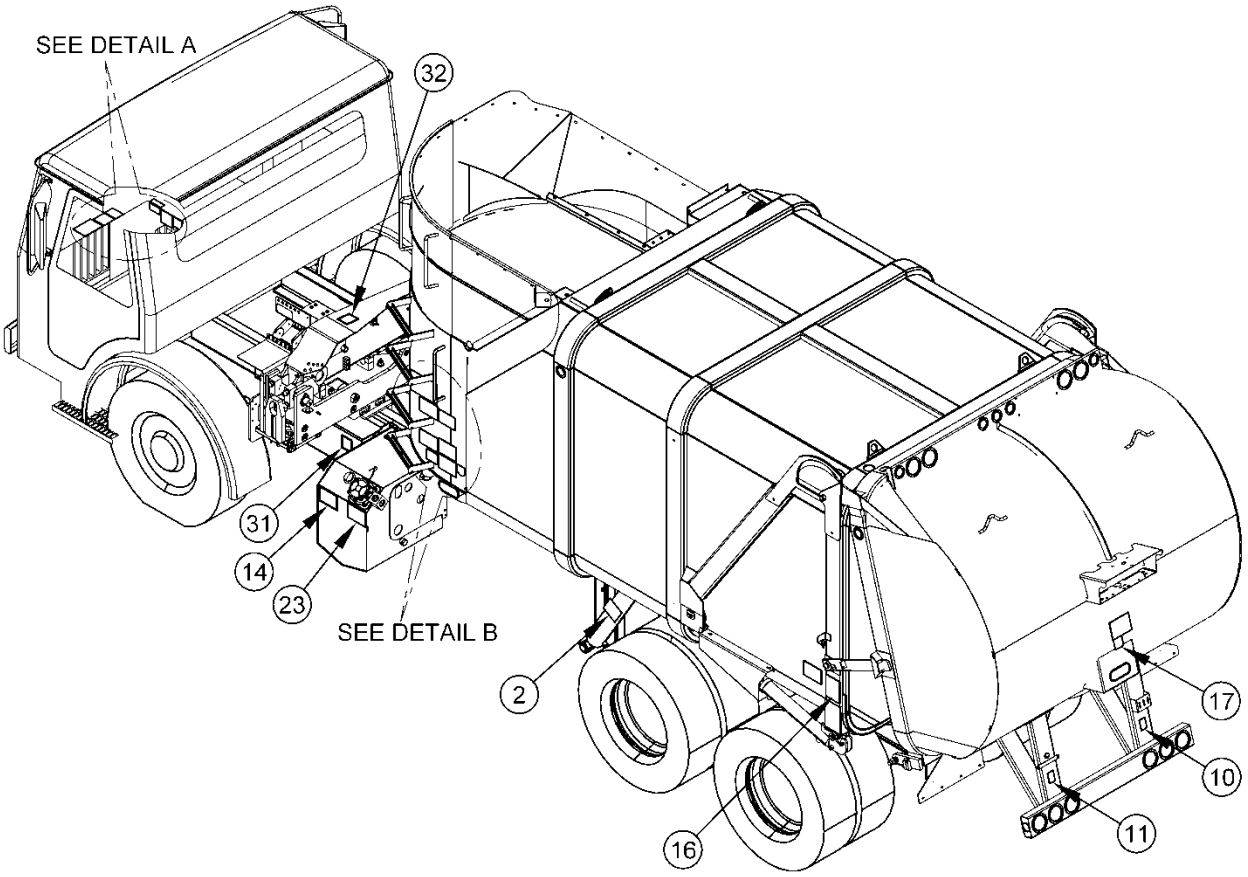
372-3651

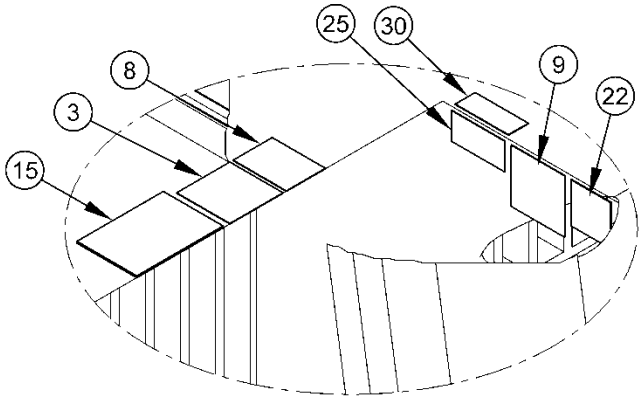
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-3651	KIT, Trim	-	REF
1	047-2147	TRACK, Metal, 1/4"	-	4
2	047-2192	NUT, Well, 1/4"-20	-	8
3	212-1343	NAME PLATE, Heil	-	2
4	212-1850	KIT, Decal (See Pg. 2165)	-	1
5	212-1855	KIT, Tape, Reflective (See Pg. 2159)	-	1
6	212-1883	PLATE, Serial No., Body	-	1
7	272-8685	INSTALLATION, Reflector (See Pg. 2159)	-	1
8	FSP070720	HHCS, 1/4”-20 x 1”, Gr. 5, Plated	-	8
9	FSP540700	WASHER, Lock, 1/4”, Plain	-	8

Note: Items 10 and 11 are deleted.

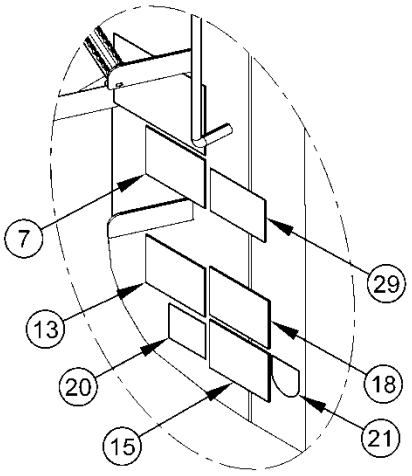
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Rapid Rail® Co-Collector
DECAL KIT
212-1850





DETAIL A



DETAIL B

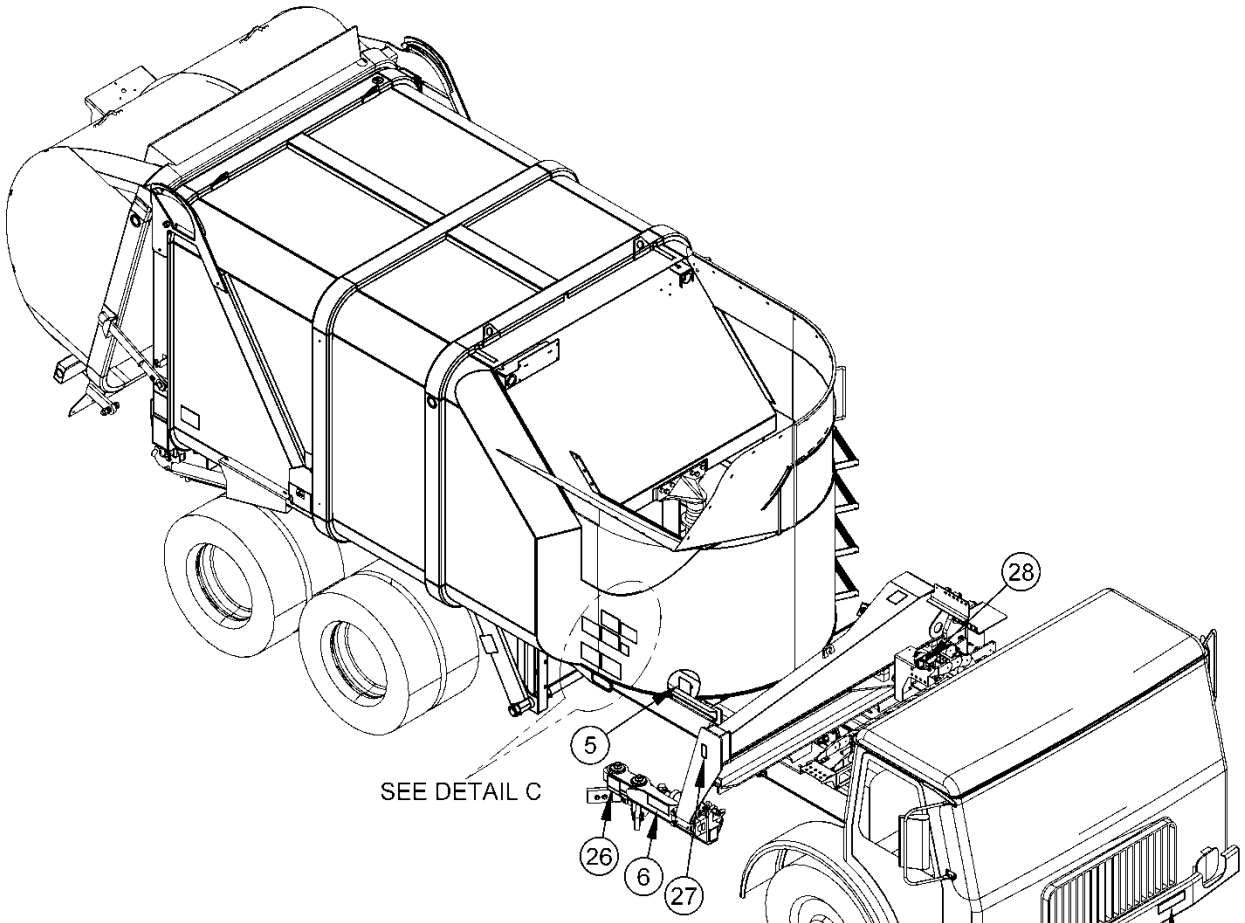
SHEET 1 OF 2

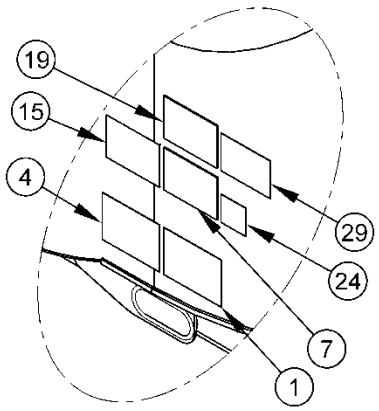
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Rapid Rail® Co-Collector
DECAL KIT
212-1850





DETAIL C

SHEET 2 OF 2

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Rapid Rail® Co-Collector
DECAL KIT
212-1850

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	212-1850	KIT, Decal	-	REF
1	212-0980	DECAL, Danger, Stay Clear, Container Off Ground	-	1
2	212-1103	DECAL, Danger, Body Elevated,	-	2
3	212-1104	DECAL, Danger, Body Elevated, Small	-	1
4	212-1242	DECAL, Danger, Stand Clear, Automated Lift Device In Motion	-	1
5	212-1329	DECAL, Instruction, Body Prop	-	2
6	212-1330	DECAL, Warning	-	1
7	212-1542	DECAL, Lubrication Guide	-	4
8	212-1584	DECAL, Overall Height	-	1
9	212-1626	DECAL, Danger, Tailgate Raise, Before Body	-	1
10	212-1631	DECAL, Warning, Bumper, Not Step	-	1
11	212-1634	DECAL, Danger, Stand Clear	-	1
12	212-1764	DECAL, Danger, Under Chassis, Stop Engine	-	4
13	212-1781	DECAL, Caution, Enter Body, Stop Engine	-	1
14	212-1782	DECAL, Hydraulic Oil Only	-	1
15	212-1783	DECAL, Warning, Operator's Manual	-	3
16	212-1801	DECAL, Danger, Stand Clear	-	3
17	212-1820	DECAL, Danger, Towing, In Cab	-	1
18	212-1841	DECAL, ANSI Specifications	-	1
19	212-1899	DECAL, Danger, Stay Clear When Container Off the Ground	-	1
20	212-1914	DECAL, Caution, Ladder	-	1
21	212-1915	DECAL, Warranty Parts	-	1
22	212-1918	DECAL, Safety Instructions	-	1
23	212-2207	DECAL, Warning, Hydraulic Oil Only	-	1
24	212-2220	DECAL, Danger	-	1
25	212-2221	DECAL, Danger	-	1
26	212-2228	DECAL, Proximity Switch, Adjustment	-	1
27	212-2232	DECAL, Danger, Stay Clear	-	1
28	212-2275	DECAL, Oil Level	-	1
29	212-2689	DECAL, Flag, Made in the USA	-	2
30	212-2738-010	DECAL, Auto/Manual Mode, Python lift	-	1
31	212-2875	DECAL, Battery, Warning	-	1
32	212-3026	DECAL, No Step	-	1
-33	212-3047	DECAL, Lubrication Guide	-	1

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SECTION 3
CONTROLS

Rapid Rail® Co-Collector
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60 I/O PC Board Bottom Input Assembly 3009
12 V I/O PC Board Top Output PLC Assembly 3009
PC Board Bottom Output PLC 12 Volt I/O Assembly 3011
Autocar 4 Button Control 3011
Splitter Harness Installation 3013
Control Panel 3015
Red Illuminated Stop Switch 3017
EOS Switch Kit 3017

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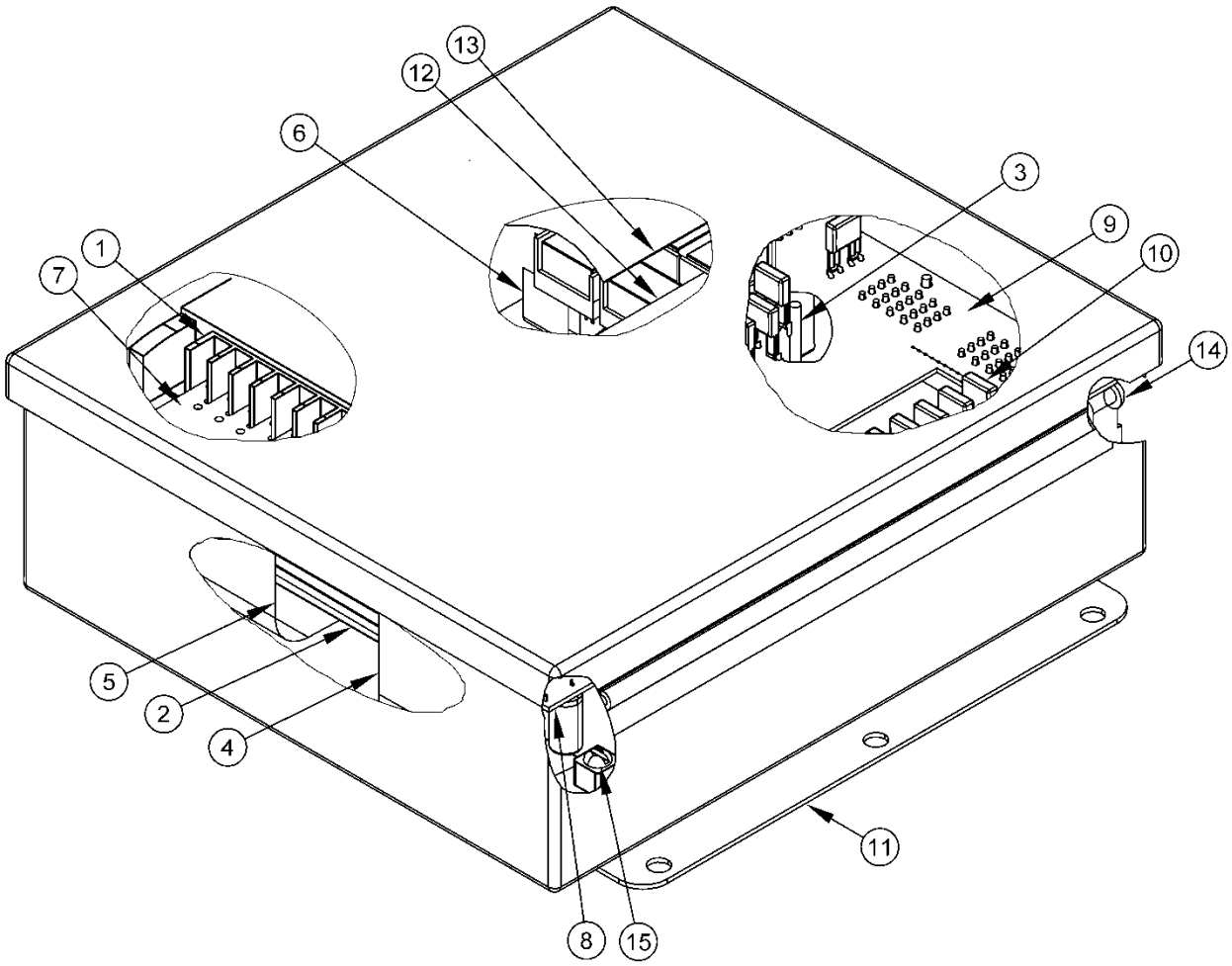
AUTOCAR WX CAB CONTROL KIT

254-4685-202

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	254-4685-202	KIT, Cab Control, Autocar WX	-	REF
1	108-5717-002	CONNECTOR, Butt, Non Insulated, 16-14 Ga.	-	10
-2	109-0236	PLC, Program (See SM 9)	-	1
-3	234-2917	PLATE, Control Box, Mount, Access Panel	-	1
-4	254-4466-060	ASSEMBLY, PLC, Sourcing, 60 I/O, 12 V (See Pg. 3007)	-	1
-5	254-4721-002	BUTTON, Control, 4, Autocar (See Pg. 3011)	-	1
-6	254-4676-002	PANEL, Control (See Pg. 3015)	-	1
-7	263-1436-007	HARNESS, PLC, Cab Controls, Body, 60 I/O (See SM 10)	-	1
-8	311-2830-002	BRACKET, Connector, Bulkhead	-	1
-9	263-1436-002	HARNESS, Chassis (See SM 10)	-	1
-10	263-1436-019	HARNESS, Selector Valve (See SM 10)	-	1

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PLC SOURCING 60 I/O 12 V ASSEMBLY
254-4466-060



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PLC SOURCING 60 I/O 12 V ASSEMBLY

254-4466-060

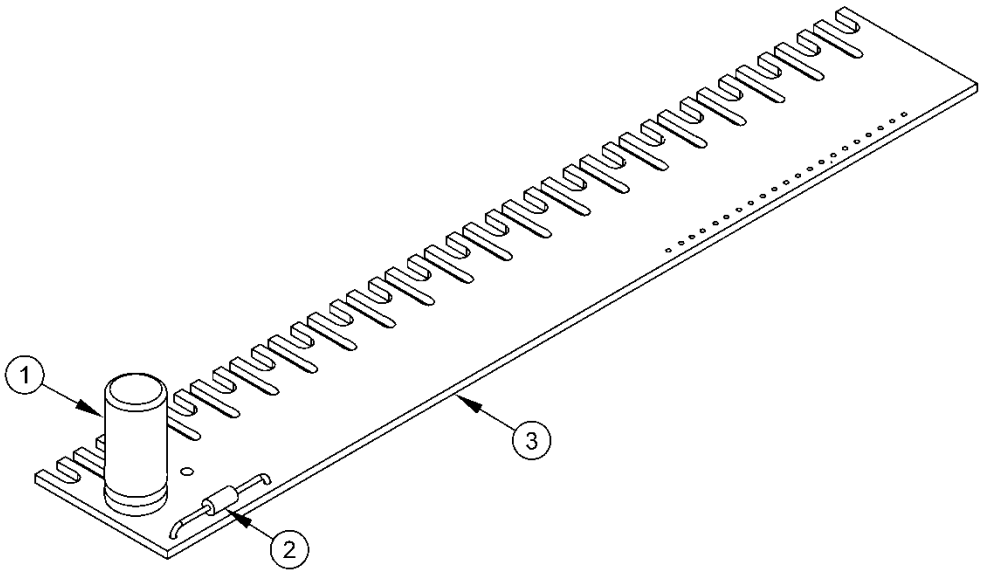
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-	254-4466-060	ASSEMBLY, PLC, Sourcing, 60 I/O, 12 V	-	REF
1	108-7715-060	PLC, 60 I/O (See SM 9)	-	1
2	108-7721-003	WIRE, Case, Jumper, Ground	-	1
3	108-7721-004	WIRE, Jumper, 12 V	-	1
4	108-7722-004	CABLE, Conductor 20, Flexible, Flat	-	1
5	108-7722-005	CABLE, Conductor 21, Flexible, Flat	-	1
6	108-7722-006	CABLE, Conductor 8, Flexible, Flat	-	1
7	108-7806-003	BOARD, PC, Top Input	-	1
8	108-7807-004	ASSEMBLY, PC Board, Input, 60 I/O, Bottom (See Pg. 3009)	-	1
9	108-7807-501	ASSEMBLY, PC Board, Output, 12 V, Top (See Pg. 3009)	-	1
10	108-7807-502	ASSEMBLY, PC Board, Output, 12 V, Bottom (See Pg. 3011)	-	1
11	151-4614	KIT, Enclosure, w/Pad Lock	-	1
12	212-2738-001	DECAL, Fuse Chart	-	1
13	212-2738-001	DECAL, I/O Address Pin, Out Chart	-	1
14	FS400409	SCREW, Mach., #10-32 x 3/8”, Rd. Hd.	-	8
15	FS410315	SCREW, Mach., #8-32 x 3/4”, Flat Hd.	-	4

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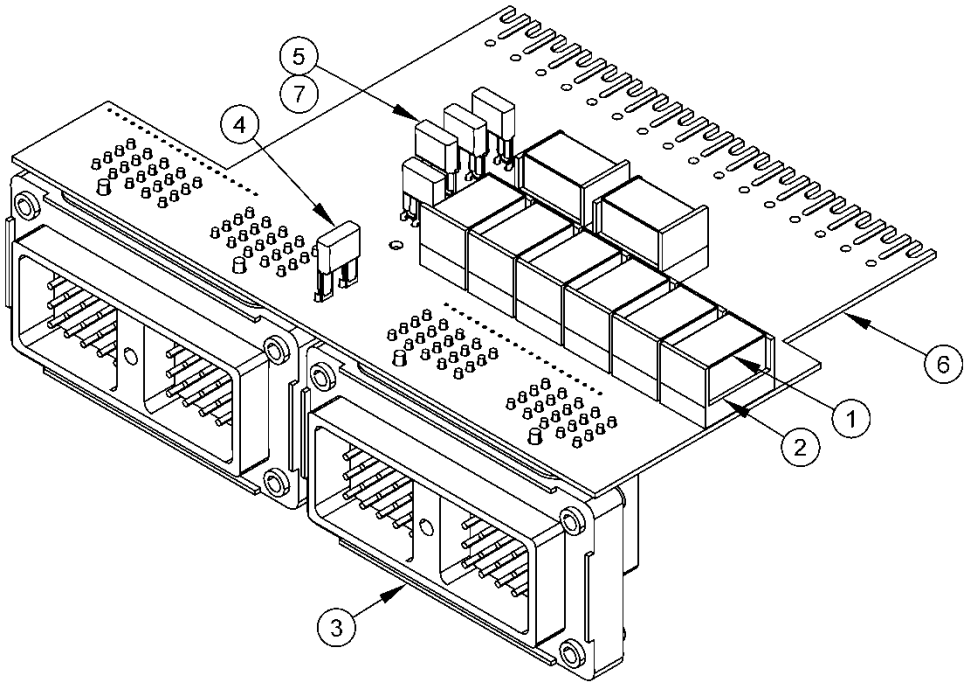
60 I/O PC BOARD BOTTOM INPUT ASSEMBLY

108-7807-004



12 V I/O PC BOARD TOP OUTPUT PLC ASSEMBLY

108-7807-501



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60 I/O PC BOARD BOTTOM INPUT ASSEMBLY

108-7807-004

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	108-7807-004	ASSEMBLY, PC Board, Input, 60 I/O, Bottom	-	REF
1	108-5622	CAPACITOR	-	1
2	108-5632	DIODE, Electronic Control, 1 Amp.	-	1
3	108-7806-004	BOARD, PC, Input, Bottom	-	1

12 V I/O PC BOARD TOP OUTPUT PLC ASSEMBLY

108-7807-501

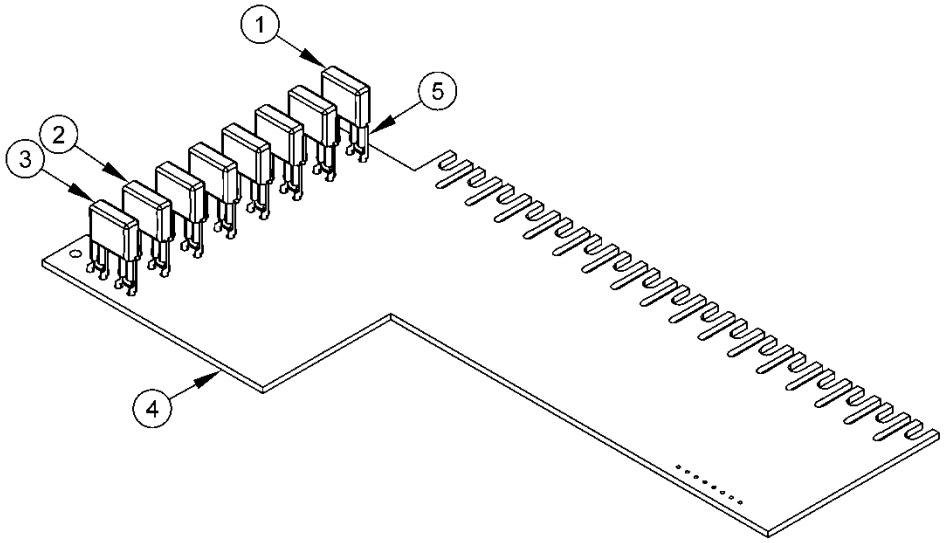
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	108-7807-501	ASSEMBLY, PC Board, Output, 12 V, Top	-	REF
1	069-0084-001	RELAY, Socketed PC Board, Low Profile, 12 V	-	8
2	069-0084-002	SOCKET, Relay, PC Board, Mount	-	8
3	108-6025-006	PCB 90, DRC 24, Deutsch	-	2
4	108-7112-004	FUSE, Mini Blade, Pink, 4 Amp.	-	1
5	108-7112-007	FUSE, Mini Blade, Brown, 7.5 Amp.	-	4
6	108-7806-501	BOARD, PC, Output, Top	-	1
7	108-8177	TERMINAL, Tab, PC, Quick Fit	-	10

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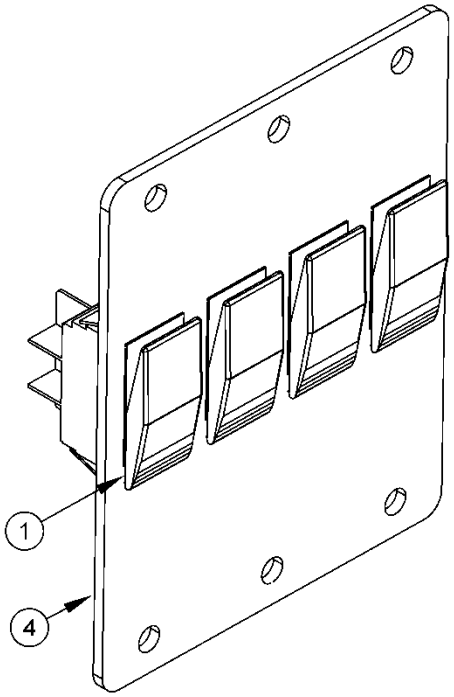
PC BOARD BOTTOM OUTPUT PLC 12 VOLT I/O ASSEMBLY

108-7807-502



AUTOCAR 4 BUTTON CONTROL

254-4721-002



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PC BOARD BOTTOM OUTPUT PLC 12 VOLT I/O ASSEMBLY

108-7807-502

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	108-7807-502	ASSEMBLY, PC Board, Output, 12 V, Bottom	-	REF
1	108-7112-002	FUSE, Mini Blade, Grey, 2 Amp.	-	3
2	108-7112-004	FUSE, Mini Blade, Pink, 4 Amp.	-	2
3	108-7112-005	FUSE, Mini Blade, Tan, 5 Amp.	-	3
4	108-7806-502	BOARD, PC, Output, Bottom	-	1
5	108-8177	TERMINAL, Tab, PC, Quick Fit	-	16

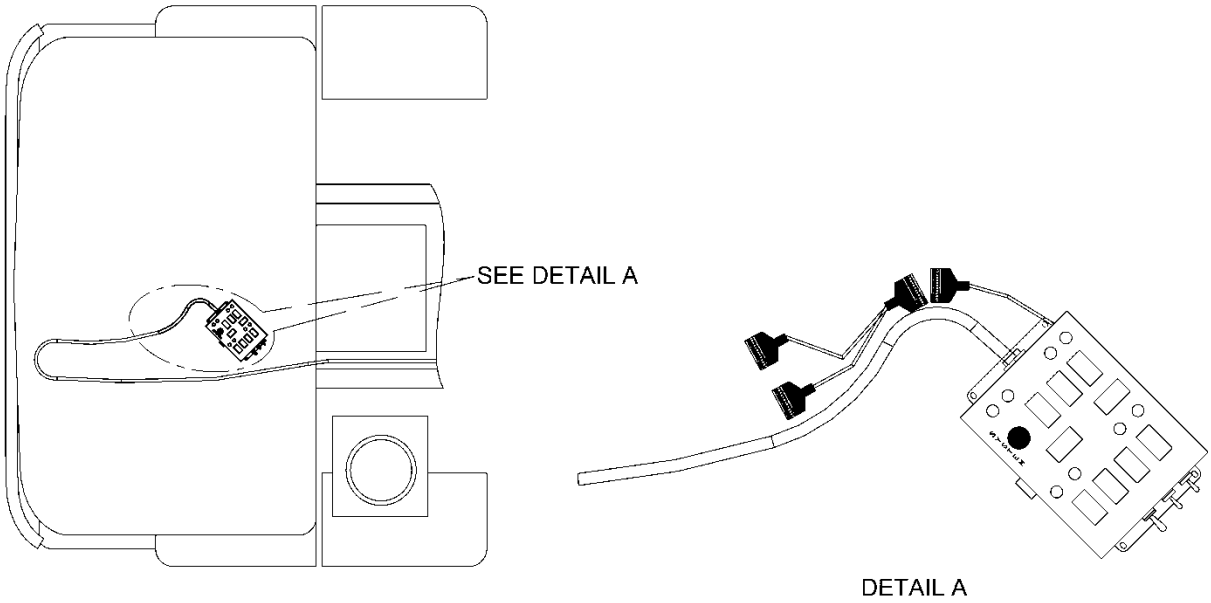
AUTOCAR 4 BUTTON CONTROL

254-4721-002

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	254-4721-002	BUTTON, Control, 4, Autocar	-	REF
1	108-7544	SWITCH, Rocker, On-Off	-	4
-2	212-3028-002	DECAL, Button 4, Autocar	-	1
-3	263-1436-014	HARNESS, Control Button, 4 (See SM 10)	-	1
4	311-3504-008	BRACKET, 4-Button, Autocar	-	1
-5	372-3610	INSTALLATION, Splitter Harness (See Pg. 3013)	-	1

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SPLITTER HARNESS INSTALLATION
372-3610



DETAIL A

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SPLITTER HARNESS INSTALLATION

372-3610

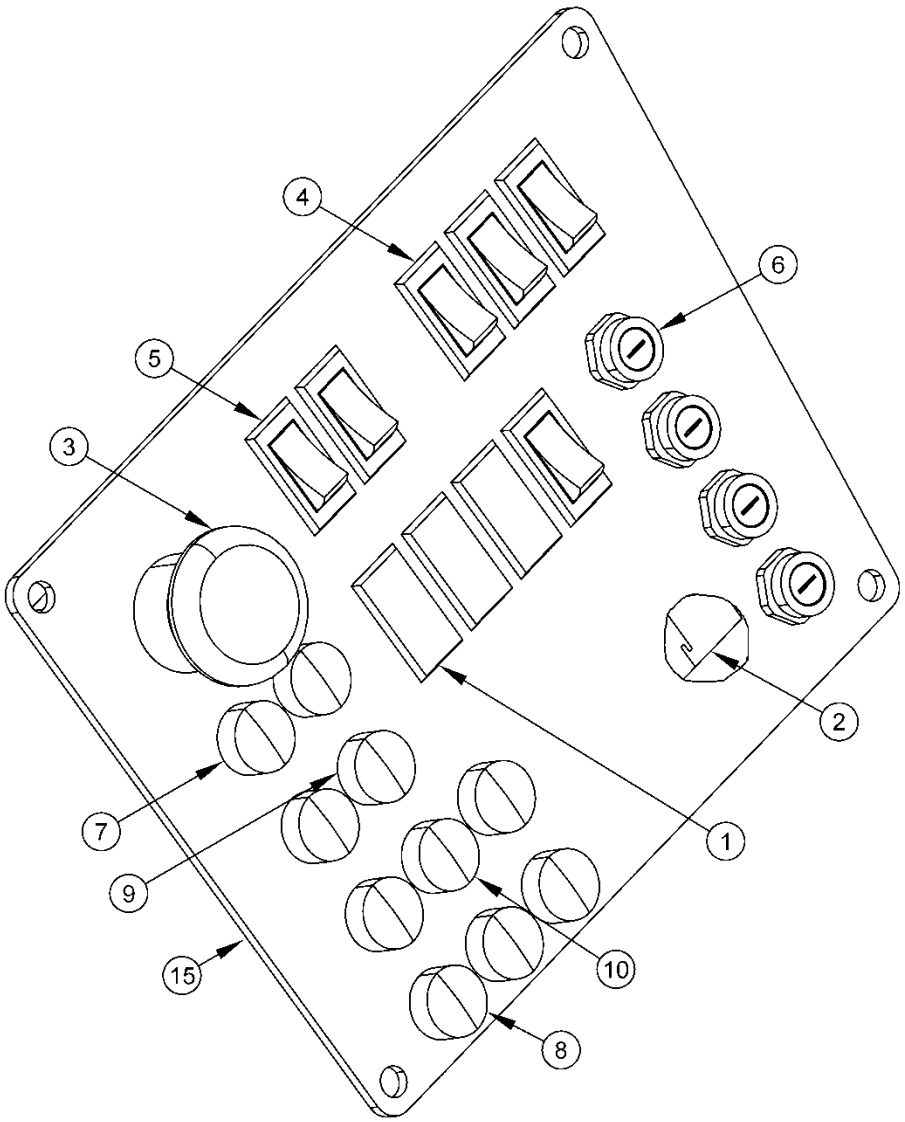
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-3610	INSTALLATION, Splitter Harness	-	REF
-1	263-0093	HARNESS, Splitter (See SM 10)	-	1
-2	036-1640-208	TIE, Wire, 7-1/25”, #50	-	4

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CONTROL PANEL

254-4676-002



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CONTROL PANEL

254-4676-002

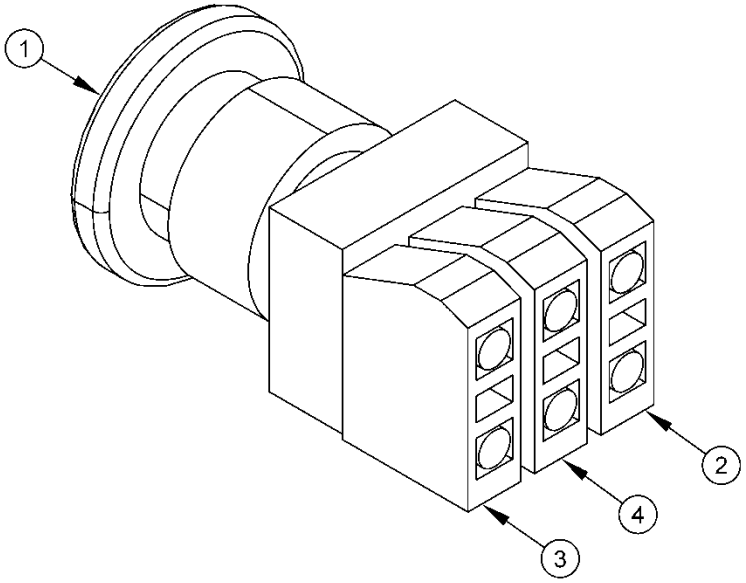
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	254-4676-002	PANEL, Control	-	REF
1	025-0603	SWITCH, Rocker, Hole Plug	-	3
2	069-0032	KIT, Micro Relay (See Section 6)	-	4
3	108-4433	SWITCH, Stop, Illuminated, Red (See Pg. 3017)	-	1
4	108-7760	SWITCH, Rocker, Allied	-	2
5	108-7760-003	SWITCH, Rocker Type	-	4
6	108-7769	HOLDER, Fuse, 5 x 20 mm	-	4
7	115-1256-001	INDICATOR, LED, Red, 16 mm	-	4
8	115-1256-002	INDICATOR, LED, Green, 16 mm	-	2
9	115-1256-003	INDICATOR, LED, Yellow, 16 mm	-	2
10	115-1256-004	INDICATOR, LED, Blue, 16 mm	-	2
-11	263-1058-001	HARNESS, Control Panel (See SM 10)	-	1
-12	263-1412-001	HARNESS, Control (See SM 10)	-	1
-13	263-1412-002	HARNESS, Control Panel (See SM 10)	-	1
-14	263-1436-016	HARNESS, Control Panel (See SM 10)	-	1
15	311-4198-002	PANEL, Control	-	1

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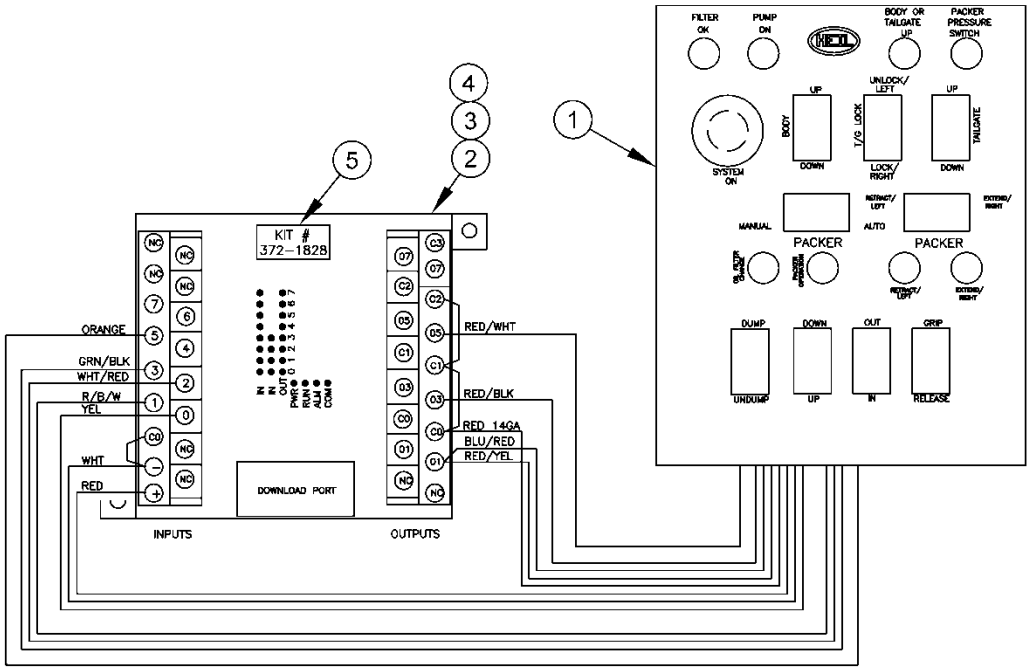
RED ILLUMINATED STOP SWITCH

108-4433



EOS SWITCH KIT

372-1828



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RED ILLUMINATED STOP SWITCH

108-4433

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	108-4433	SWITCH, Stop, Illuminated, Red	-	REF
1	108-7631-001	SWITCH, Stop, Illuminated, Red	-	1
2	108-7631-002	BLOCK, Contact, NC	-	1
3	108-7631-003	BLOCK, Contact, Push Button, Base, w/NC	-	1
4	108-7631-004	MODULE, LED Light, 24 V	-	1

EOS SWITCH KIT

372-1828

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-1828	KIT, Switch, EOS	-	REF
1	254-4519	BOX, Control	-	REF
2	372-1906	ENCLOSURE, PLC, Mini	-	1
3	108-7860	CONTROLLER, PLC, Mini	-	1
4	109-0183	PLC, Program (See SM 9)	-	REF
5	212-2784-004	KIT, Label, PLC	-	1

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SECTION 4
HYDRAULIC AND PNEUMATIC CIRCUITS

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Chassis Hydraulic Kit 4015

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Constant Drive Remote Mount PTO/Pump Installation Kit 4019

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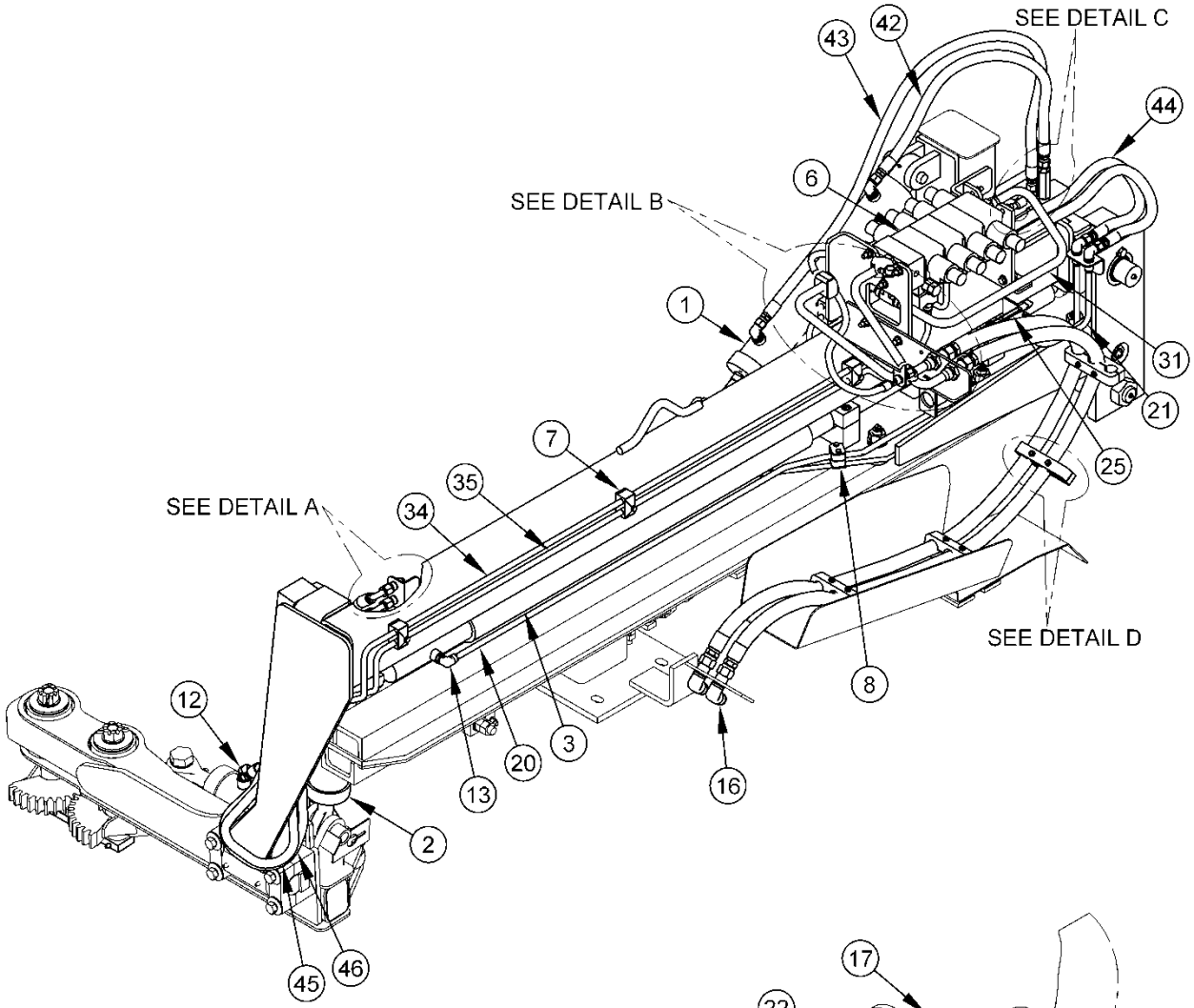
BODY HYDRAULIC KITS

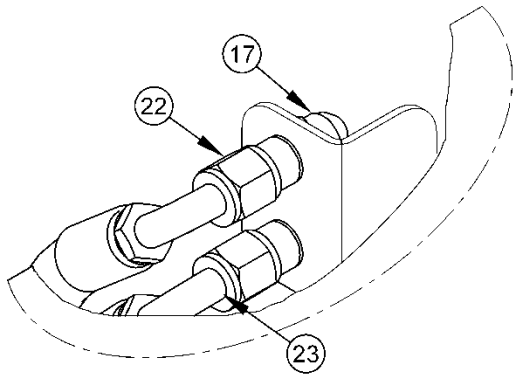
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LOADER HYDRAULIC KIT

372-0331





DETAIL A

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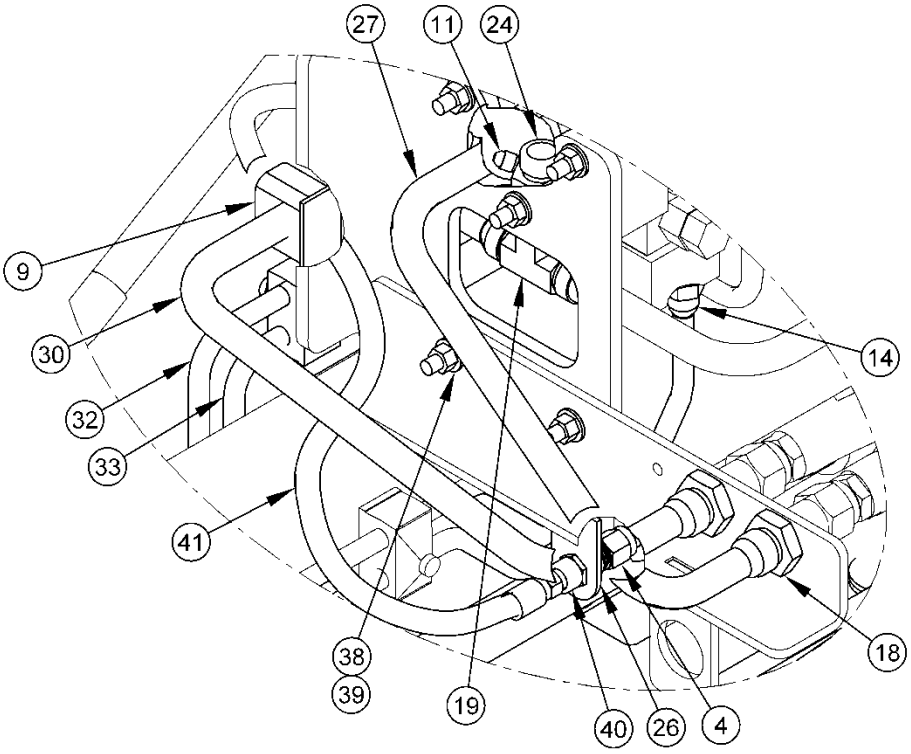
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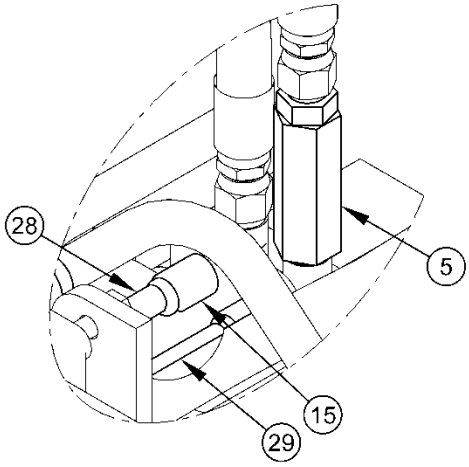
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LOADER HYDRAULIC KIT

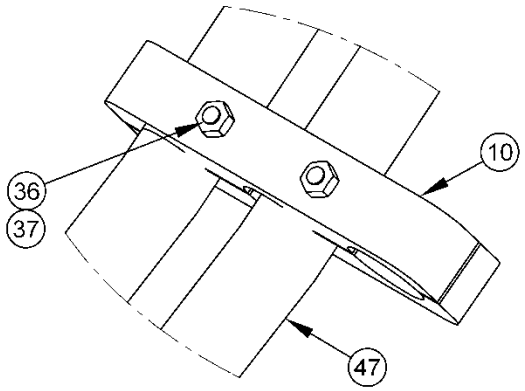
372-0331



DETAIL B



DETAIL C



DETAIL D

SHEET 2 OF 2

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LOADER HYDRAULIC KIT

372-0331

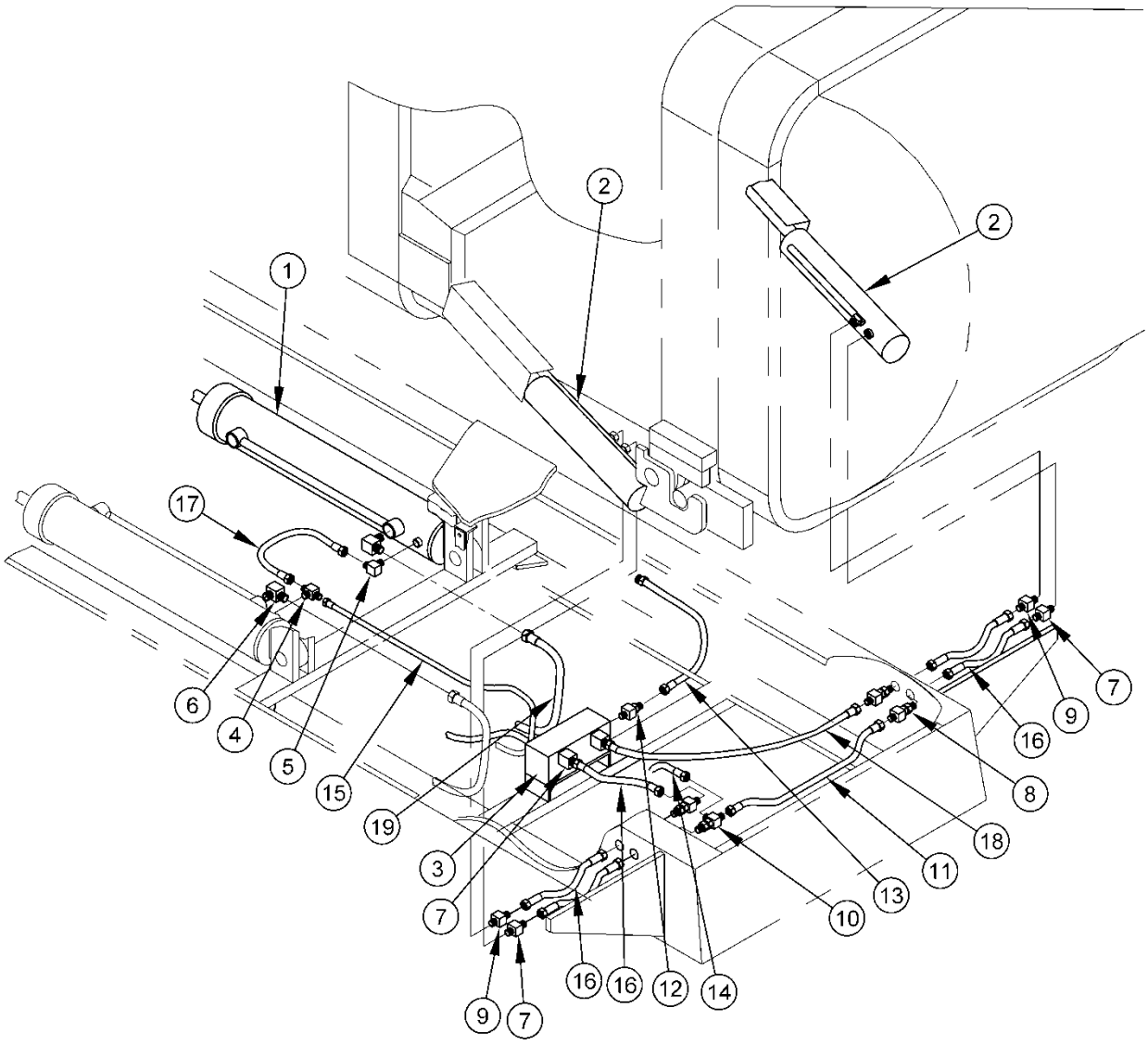
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-0331	KIT, Hydraulic, Loader	-	REF
1	001-6404	CYLINDER, Arm Raise (See Section 5)	-	1
2	001-6407	CYLINDER, Dump (See Section 5)	-	1
3	001-6757	CYLINDER, In/Out (See Section 5)	-	1
4	031-1900	SNUBBER, Pressure	-	1
5	031-6006	RESTRICTOR, In-Line	-	1
6	031-6283	VALVE, Loader, Greson MD-06 (See Section 5)	-	1
7	036-1495-008	CLAMP, Twin Stauff, 1/2"	-	6
8	036-1597-003	CLAMP, Stauff, 1/2”	-	1
9	036-1597-005	CLAMP, Hydraulic Tube, 3/4”	-	1
10	036-1819	CLAMP, Hose	-	4
11	054-3005-003	ELBOW, Male, 45°, 1/4” SAE x 1/4” JIC	-	1
12	054-3005-006	ELBOW, 45°, 1/2" SAE-JIC	-	2
13	054-3340-006	ELBOW, O-Ring 1/2" to 1/2" JIC	-	7
14	054-3341-006	CONNECTOR, Male, Tube to Str. Thd., 3/4"-16 x 1/2", #8	-	7
15	054-3533-006	ELBOW, Union, Bulkhead, Tube to Tube, 3/4"-16 x 1/2", #8	-	4
16	054-3533-008	ELBOW, Union, Bulkhead, Tube to Tube, 3/4''	-	2
17	054-3535-006	UNION, Bulkhead, Tube to Tube, 3/4"-16 x 1/2"	-	4
18	054-3535-008	FITTING, Bulkhead, Str., 3/4" JIC	-	2
19	054-3623-008	TEE, Swivel, 3/4”, JIC	-	1
20	054-8775	ASSEMBLY, Tube, Extend	-	1
21	054-8776	ASSEMBLY, Tube, Retract	-	1
22	057-2824-013	ASSEMBLY, Hose, Pressure, 1/2” x 13”	-	1
23	057-2824-019	ASSEMBLY, Hose, Pressure, 1/2” x 19”	-	1
24	058-3205-015	ADAPTER, Str., #12 MJIC to #8 MSAE	-	3
25	063-0116	SWITCH, Pressure, Deutsch Connection	-	1
26	211-9174	BRACKET, Pressure Switch	-	1
27	354-1663	ASSEMBLY, Tube, Inlet Pressure	-	1
28	354-1664	ASSEMBLY, Tube, Lift Exhaust	-	1
29	354-1665	ASSEMBLY, Tube, Lift Pressure	-	1
30	354-3013	ASSEMBLY, Tube, Relief Exhaust	-	1
31	354-3014	ASSEMBLY, Tube, Exhaust Return	-	1
32	354-3015	ASSEMBLY, Tube, Dump	-	1
33	354-3016	ASSEMBLY, Tube, Undump	-	1
34	354-3017	ASSEMBLY, Tube, Grip	-	1
35	354-3018	ASSEMBLY, Tube, Release	-	1
36	FS070730	HHCS, 1/4”-20 x 2” Bolt	-	8
37	FS230700	NUT, Lock, 1/4”-20, Gr. 5	-	8
38	FS240900	NUT, Lock, 3/8”-16, Gr. 5.	-	6
39	FS510900	WASHER, Flat, 3/8”, Std., Plain	-	6
40	FS640700	COUPLING, Steel Pipe, Full, 1/4”	-	1
41	QC1-ACFC-024	HOSE, 1/4”, Pipe, 37° JIC, Male to Female, Swivel, 24”	-	1
42	QC3-FFFF-027	HOSE, 1/2" ID, 37° JIC, Female, Swivel, 27”	-	2
43	QC3-FFFF-043	HOSE, 1/2" ID, 37° JIC, Female, Swivel, 43”	-	1
44	QC3-FFFF-027	HOSE, 1/2" ID, 37° JIC, Female, Swivel, 27”	-	1
45	QC3-FFFF-041	HOSE, 1/2" ID, 37° JIC, Female, Swivel, 41”	-	1
46	QC3-FFFF-047	HOSE, 1/2" ID, 37° JIC, Female, Swivel, 47”	-	1
47	QR5-FHFH-072	HOSE, 3/4", 37° JIC Female to Male Swivel, 47”	-	2

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20 AND 26 YARD BODY HYDRAULIC KIT

272-8909



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20 AND 26 YARD BODY HYDRAULIC KIT

272-8909

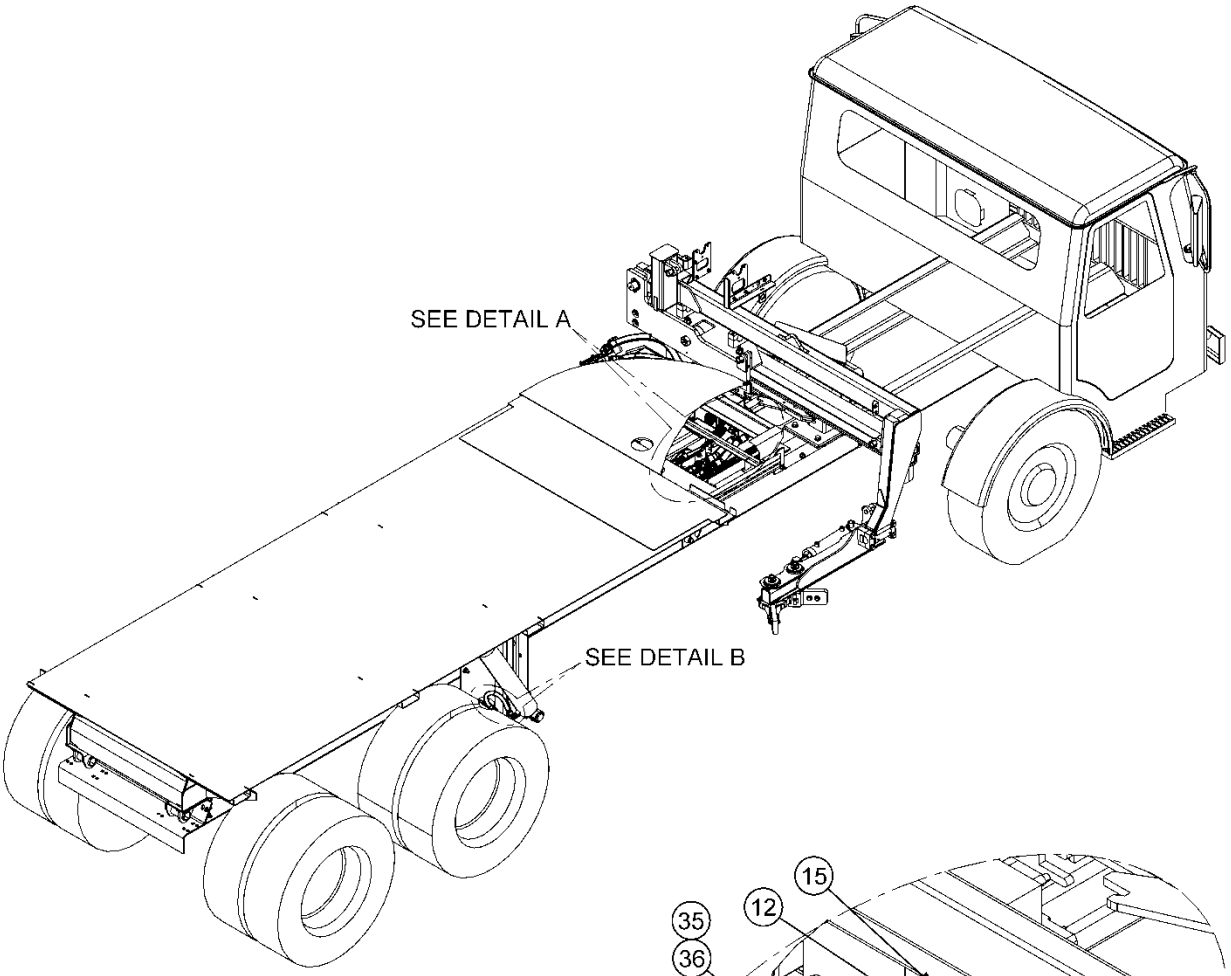
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	272-8909	KIT, Body Hydraulic, 20 and 26 Yd.	-	REF
1	001-6406	CYLINDER, Packer (See Section 5)	-	2
2	001-6754	CYLINDER, Tailgate (See Section 5)	-	2
3	031-6074	VALVE, Selector, Tailgate (See Section 5)	-	1
4	054-2833-006	TEE, Branch, 1/2” SAE	-	1
5	054-3340-006	ELBOW, 90°, 1/2" SAE-JIC	-	2
6	054-3340-010	ELBOW, 90°, Male, Tube to Str. Thd., 7/8"-14	-	2
7	054-3341-006	CONNECTOR, Male, 1/2" JIC-SAE	-	4
8	054-3535-006	UNION, Bulkhead, Tube to Tube, 3/4"-16 x 1/2"	-	3
9	054-7007	FITTING, Orifice, Adapter, Special	-	2
10	054-7605-008	TEE, Male, Bulkhead, 37° Flare, SAE, 3/4"-16 x 1/2", #8	-	1
11	054-8789	TUBE, Tailgate Body	-	1
12	058-3205-022	REDUCER, Str., 3/8”-1/2”	-	1
13	QC3-EFFF-050	ASSEMBLY, Hose, 1/2", 37° JIC, Male to Female, 50"	-	1
14	QC3-EFFF-060	ASSEMBLY, Hose, 1/2", 37° JIC Male to Female, Swivel, 60”	-	2
15	QC3-EFFF-072	ASSEMBLY, Hose, 1/2", 37° JIC, Male to Female, 72"	-	1
16	QC3-FFFF-026	ASSEMBLY, Hose, 1/2", 37° JIC Female Swivel, 26”	-	5
17	QC3-FFFF-033	ASSEMBLY, Hose, 1/2" Hoist, 37° JIC Female Swivel, 33"	-	1
18	QC3-FFFF-036	ASSEMBLY, Hose, 1/2" Hoist, 37° JIC Female Swivel, 36"	-	1
19	QF6-EKFK-072	HOSE, Packer Pivot, 1", 37° JIC Male to Female, Swivel, 72”	-	2

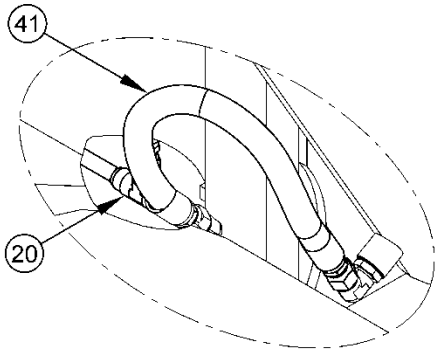
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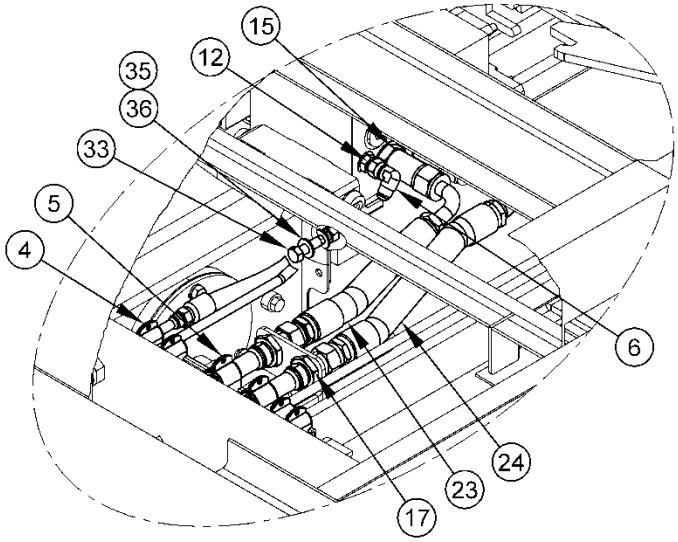
CHASSIS HYDRAULIC KIT

372-5917





DETAIL A



DETAIL B

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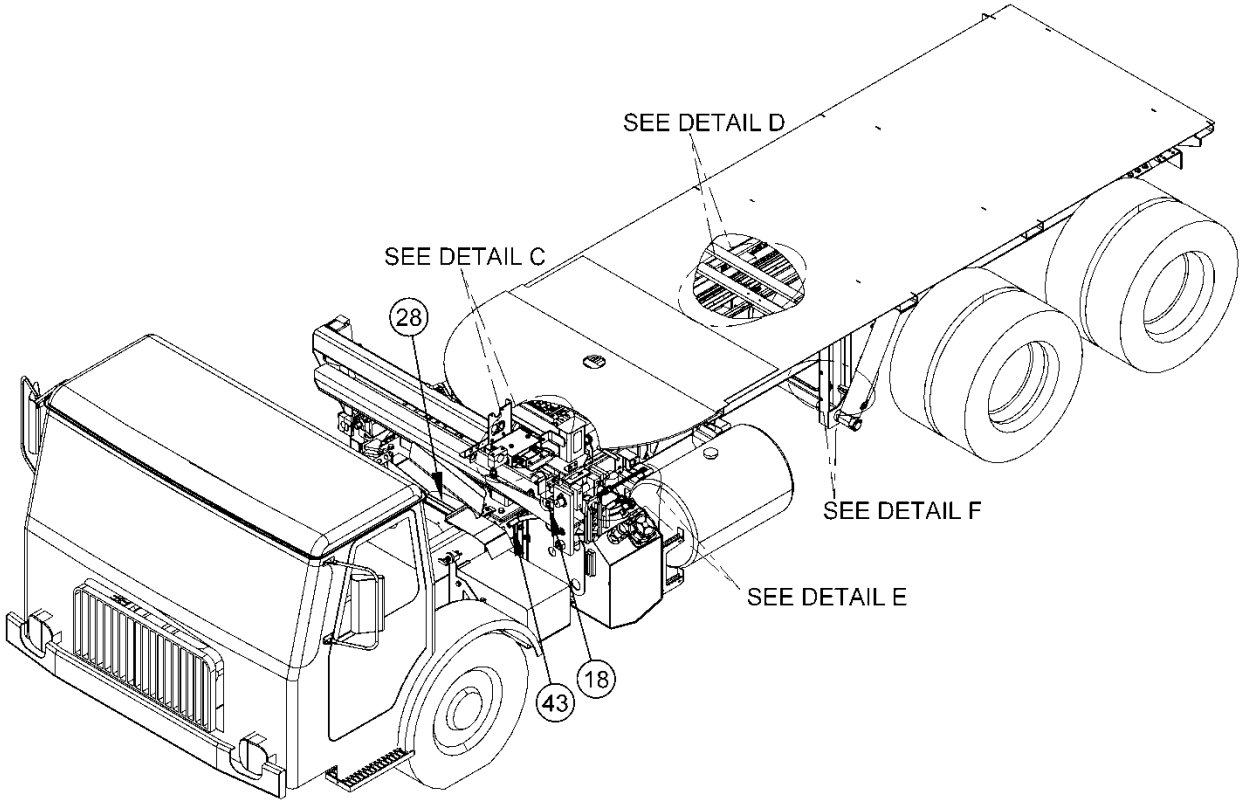
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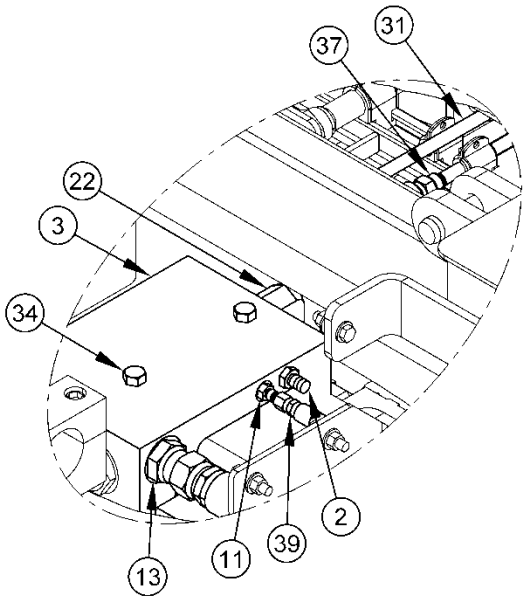
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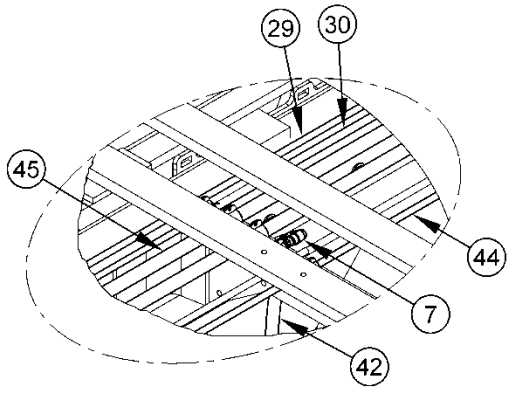
CHASSIS HYDRAULIC KIT

372-5917





DETAIL C



DETAIL D

SHEET 2 OF 3

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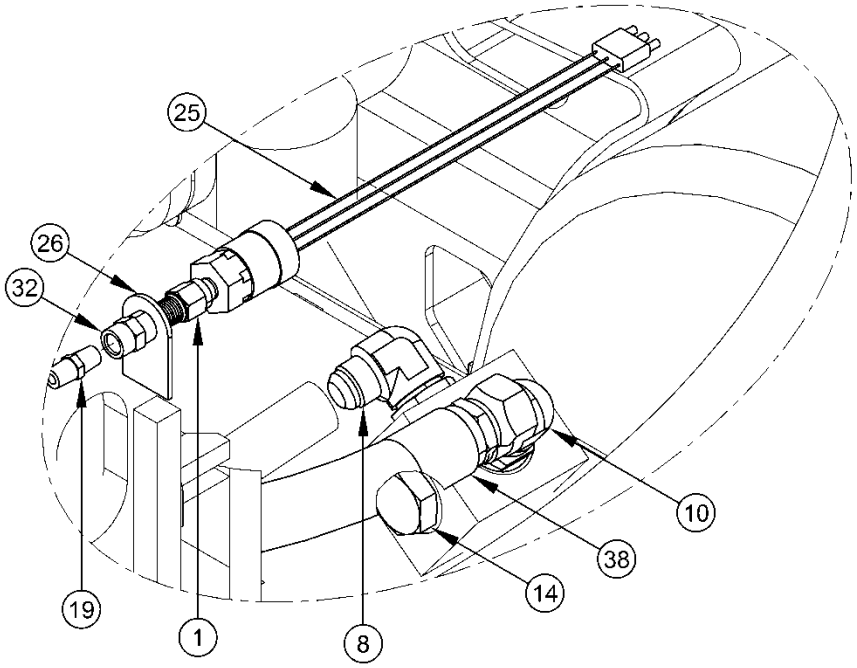
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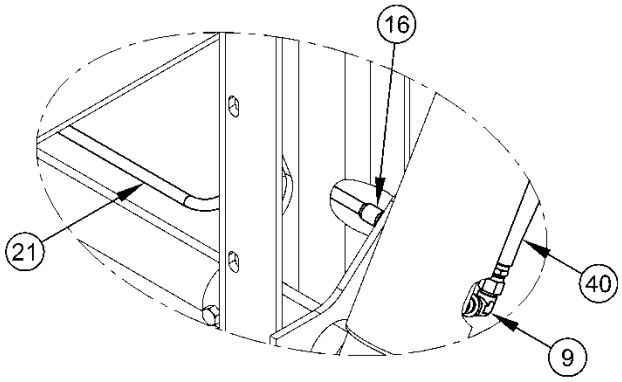
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CHASSIS HYDRAULIC KIT

372-5917



DETAIL E



DETAIL F

SHEET 3 OF 3

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CHASSIS HYDRAULIC KIT

372-5917

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-5917	KIT, Hydraulic, Chassis	-	REF
1	031-1900	SNUBBER, Pressure	-	1
2	031-5601-004	DISCONNECT, Quick, Male, SAE, #4	-	1
3	031-6194	VALVE, Body (See Section 5)	-	1
4	036-1474-004	ASSEMBLY, Clamp, Tubing, Hydraulic, 1/2''	-	11
5	036-1474-008	ASSEMBLY, Clamp, Hydraulic Tubing, 1"	-	6
6	054-2988-006	ELBOW, Male to Female Swivel, 90°, 37° Flare,	-	
		Swivel Tube 3/4"-16 x 1/2", #8	-	2
7	054-3185-008	ELBOW, Male, 90°, Union, 1/2"	-	1
8	054-3237-003	ELBOW, Male, Reducing, 90°,	-	
		Tube 1-1/16"-12 x 3/4" to Str. Thd. 1-5/16"-12 x 1"	-	1
9	054-3340-006	ELBOW, Male, 90°, Tube to Str. Thd. 3/4"-16 x 1/2", #8	-	2
10	054-3340-010	ELBOW, Male, 90°, Tube to Str. Thd. 1-5/16"-12 x 1", #16	-	1
11	054-3341-003	CONNECTOR, Male, Tube to Straight, 1/4"	-	1
12	054-3341-006	CONNECTOR, Male, Tube to Straight, 1/2"	-	3
13	054-3341-010	CONNECTOR, Male, Tube to Str. Thd., 1-5/16"-12 x 1", #8	-	1
14	054-3342-010	PLUG, Str. Thd., 1-5/16"-12 x 1", #16	-	2
15	054-3345-010	ADAPTER, Extended, #16 SAE-#16 JIC	-	2
16	054-3533-006	ELBOW, Union, Bulkhead, Tube to Tube, 3/4"-16 x 1/2", #8	-	1
17	054-3535-010	FITTING, Bulkhead, 1"	-	2
18	054-3667-007	ADAPTER, Male, 37° Flare, Tube 3/4"-16 x 1/2" NPT	-	1
19	054-7373	NIPPLE, Steel, Hex, 1/4" NPT	-	1
20	054-7605-008	TEE, Bulkhead, 1/2"	-	1
21	054-8788	TUBE, Lift, Body	-	1
22	054-9408-016	ELBOW, 90°, 1" Male SAE x 1" Male JIC	-	1
23	057-2940	HOSE, 1" x 15", 90°, 37° JIC Female to Male Swivel	-	1
24	057-2941	HOSE, 1" x 18", 90°, 37° JIC Female to Male Swivel	-	1
25	063-0115	SWITCH, Pressure, w/Connector, Packard	-	1
26	211-9174	BRACKET, Pressure Switch	-	1
-27	263-1040	HARNESS, Valve, Vickers (See SM 10)	-	1
28	354-0480	TUBE, Return, Loader	-	1
29	354-1678	TUBE, Tailgate Base, B Port	-	1
30	354-1679	TUBE, Tailgate Base, A Port	-	1
31	354-3898	TUBE, Body Hoist, C Port	-	1
32	FS640700	COUPLING, Steel Pipe, Full, 1/4"	-	1
33	FSP071124	HHCS, 1/2"-13 x 1-1/2", Gr. 5, Plated	-	6
34	FSP071180	HHCS, 1/2"-13 x 7", Gr. 5, Plated	-	2
35	FSP231100	NUT, Lock, 1/2"-13, Gr. 5, Plated	-	8
36	FSP521100	WASHER, Flat, 1/2", SAE, Plated	-	12
37	QA3-EFFF-045	HOSE, 1/2'', 1/2'' FJIC-1/2'' MJIC, 37° Male to Female Swivel, 45''	-	1
38	QA6-FKFK-038	HOSE, 1'', 1'' FJIC-1'' FJIC, 37° Female to Male Swivel, 38''	-	1
39	QC1-CCFC-030	HOSE, 1/4'', 1/4'' FJIC-1/4'' FNPT, 37° Female to Male Swivel, 30''	-	1
40	QC3-FFFF-026	HOSE, 1/2'', 1/2" FJIC-1/2'' FJIC, 37° JIC Female Swivel, 26"	-	1
41	QC3-FFFF-026	HOSE, 1/2'', 1/2" FJIC-1/2'' FJIC, 37° JIC Female Swivel, 26"	-	1
42	QC3-FFFF-036	HOSE, 1/2'', 1/2" FJIC-1/2'' FJIC, 37° JIC Female Swivel, 36"	-	1
43	QE5-EHFH-038	HOSE, 3/4'', 3/4" FJIC-3/4'' MJIC,	-	
		37° JIC Male to Female Swivel, 38"	-	1
44	TAS-C160	TUBE, Str., 1/2''	-	1
45	TAS-F16zx5-050	TUBE, Str., 1" OD	-	2

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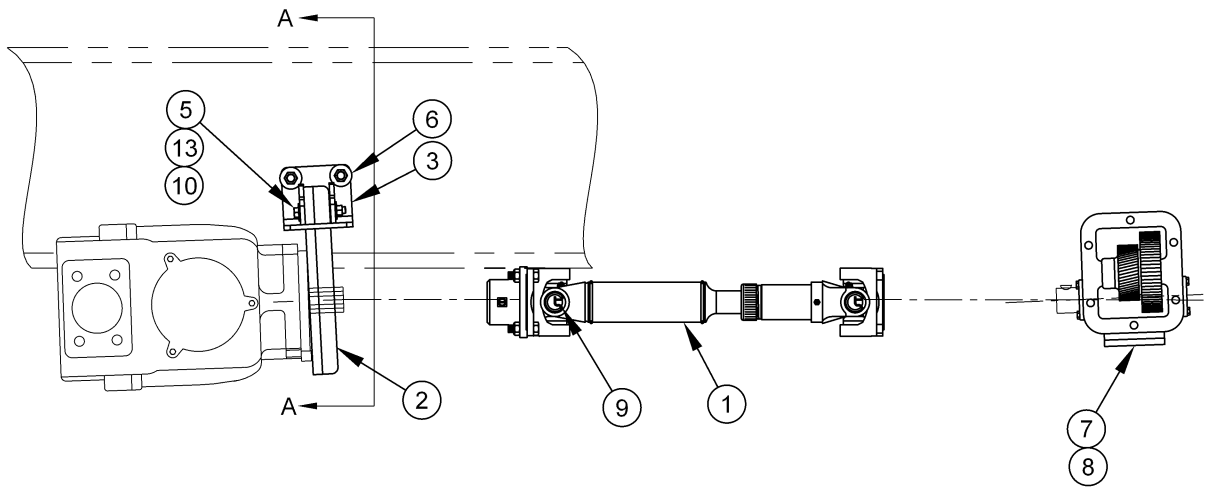
CONSTANT DRIVE PTO REMOTE MOUNT PUMP INSTALLATION KIT

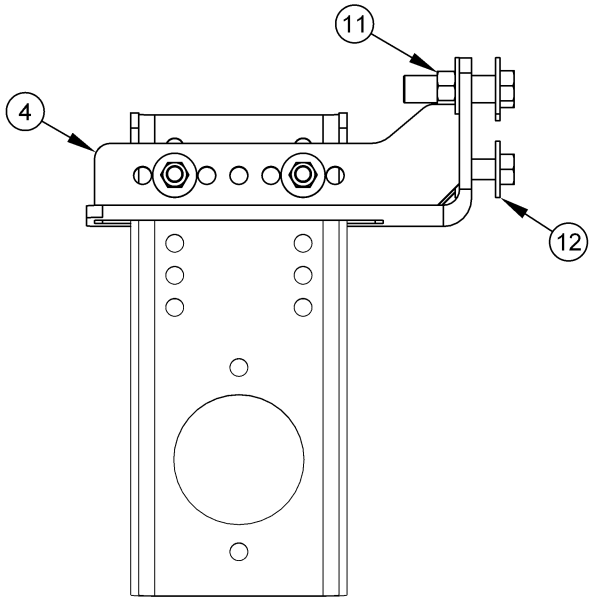
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CONSTANT DRIVE REMOTE MOUNT PTO/PUMP INSTALLATION KIT

372-4615-001, 372-4615-002





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CONSTANT DRIVE REMOTE MOUNT PTO/PUMP INSTALLATION KIT

372-4615-001, 372-4615-002

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-4615-001	KIT, Installation, PTO/Pump, Remote Mount, Constant Drive, 2-Bolt Flange	A	REF
-	372-4615-002	KIT, Installation, PTO/Pump, Remote Mount, Constant Drive, 4-Bolt Flange	B	REF
1	030-0850	DRIVELINE, Solid Shaft	-	1
2	311-5102-002	BRACKET, Pump, 2 Bolt Flange	-	1
3	311-5102-005	WELDMENT, Pump Bracket	-	1
4	015-2274-001	SPACER, 1/2", SCH 40	-	2
5	FSP071146	HHCS, 1/2"-13 x 3-3/4” Gr. 5, Plated	-	2
6	FSP081340	HHCS, 5/8”-11 x 3”, Gr. 8, Plated	-	3
7	253-2414	PTO/PUMP, Constant Drive, Low Torque	A	1
8	253-2401	PTO, Muncie	B	1
9	263-0042	WIRE, Safety, Driveline Lock, S/S, 17 Ga., 0.41 Dia.	-	2
10	FSP231100	NUT, Lock, 1/2’’-13, Gr. 5, Plated	-	2
11	FSP231300	NUT, 5/8”-11, Gr. 5, Plated	-	3
12	FSP511300	WASHER, Flat, 5/8” Std., Plated	-	6
13	FSP511100	WASHER, Flat, 1/2" Std., Plated	-	4

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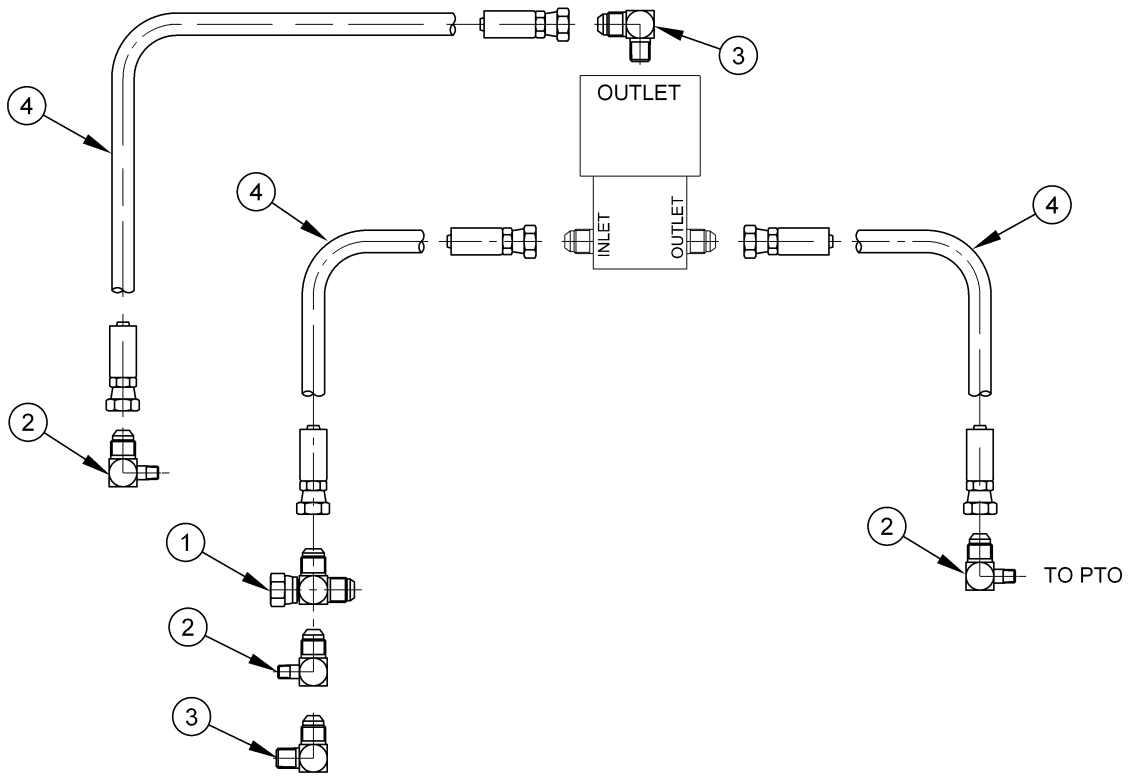
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HOT SHIFT PTO HOSE KIT
272-6710



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DIRECT MOUNT PTO KIT

558-0003, 558-0004

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	558-0003	KIT, PTO, Direct mount, Chelsea	A	REF
-	558-0004	KIT, PTO, Direct mount, Muncie	B	REF
-1	253-2152	PTO, Hot Shift, Chelsea	A	1
-1a	253-2402	PTO, Hot Shift, Muncie	B	1
-2	272-6710	KIT, Hose, PTO, Hot Shift (See pg. 4023)	-	1

HOT SHIFT PTO HOSE KIT

272-6710

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	272-6710	KIT, Hose, PTO, Hot Shift	-	REF
1	054-3624-003	TEE, Run, Female Swivel, 37° Flare, Tube, 7/16”-20 x 1/4”, #4	-	1
2	054-3666-003	ELBOW, 90°, 7/16”-20 x 1/4" NPT to JIC 1/8”-27	-	3
3	054-3667-002	ADAPTER, Male, 37° Flare, Tube 7/16”-20 x 1/4" NPT	-	2
4	057-0977	ASSEMBLY, Hose, Pressure, 1/4"	-	3

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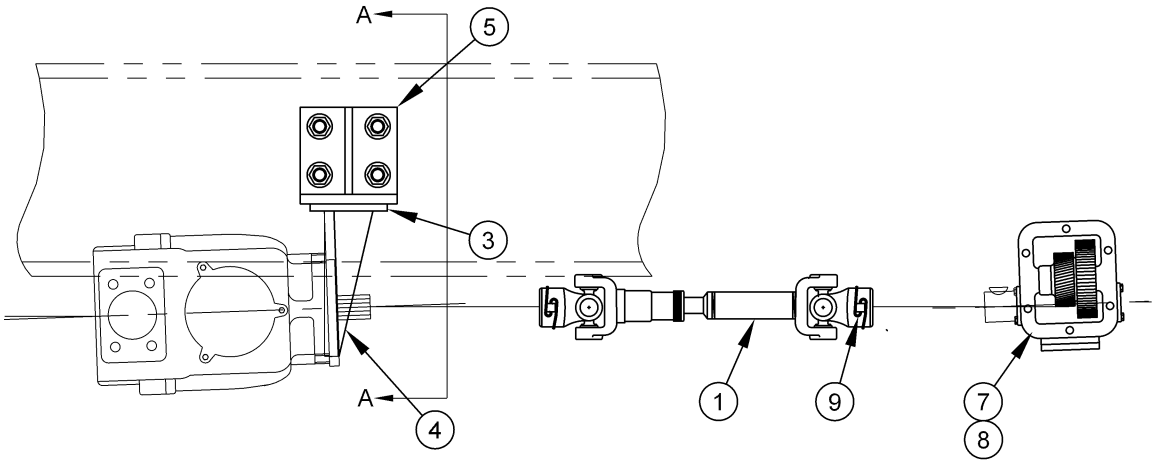
HOT SHIFT PTO REMOTE MOUNT PUMP INSTALLATION KIT

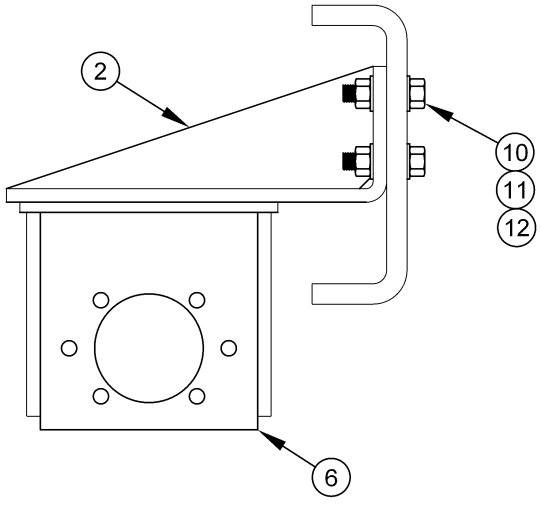
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HOT SHIFT PTO REMOTE MOUNT PUMP INSTALLATION KIT

372-4616-001, 372-4616-002





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HOT SHIFT PTO REMOTE MOUNT PUMP INSTALLATION KIT

372-4616-001, 372-4616-002

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-4616-001	KIT, Installation, Pump, Remote Mount, PTO, Hot Shift,	-	
		2-Bolt, Low Torque	A	REF
-	372-4616-002	KIT, Installation, Pump, Remote Mount, PTO, Hot Shift,	-	
		4-Bolt, Low Torque	B	REF
1	030-0716	DRIVELINE, Solid Shaft	-	1
2	126-4120	BRACKET, Pump, Reinforcement	-	1
3	134-9644-053	PLATE, Base, Pump	-	1
4	211-6417-003	BRACE, Pump, Mount	-	2
5	211-9084	BRACKET, Mtg., Frame, PTO, 1/2”	-	1
6	211-9893	BRACKET, Pump, Mount, SAE “B”	-	1
7	253-2152	PTO, Hot Shift, Chelsea	A	1
8	253-2402	PTO, Hot Shift, Muncie	B	1
9	263-0042	WIRE, Safety, Driveline Lock, S/S, 17 Ga., 0.41 Dia.	-	2
10	FSP071330	HHCS, 5/8’’-11 x 2’’, Gr. 5, Plated	-	4
11	FSP231300	NUT, Lock, 5/8”, Gr. 5, Plated	-	4
12	FSP511300	NUT, Lock, 5/8’’-11, Gr. 5, Plated	-	8
-13	272-6710	KIT, Hose, PTO, Hot Shift (See pg. 4023)	-	1

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PTO MOUNT PUMP KITS

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VICKERS DIRECT MOUNT PTO KIT

557-0005

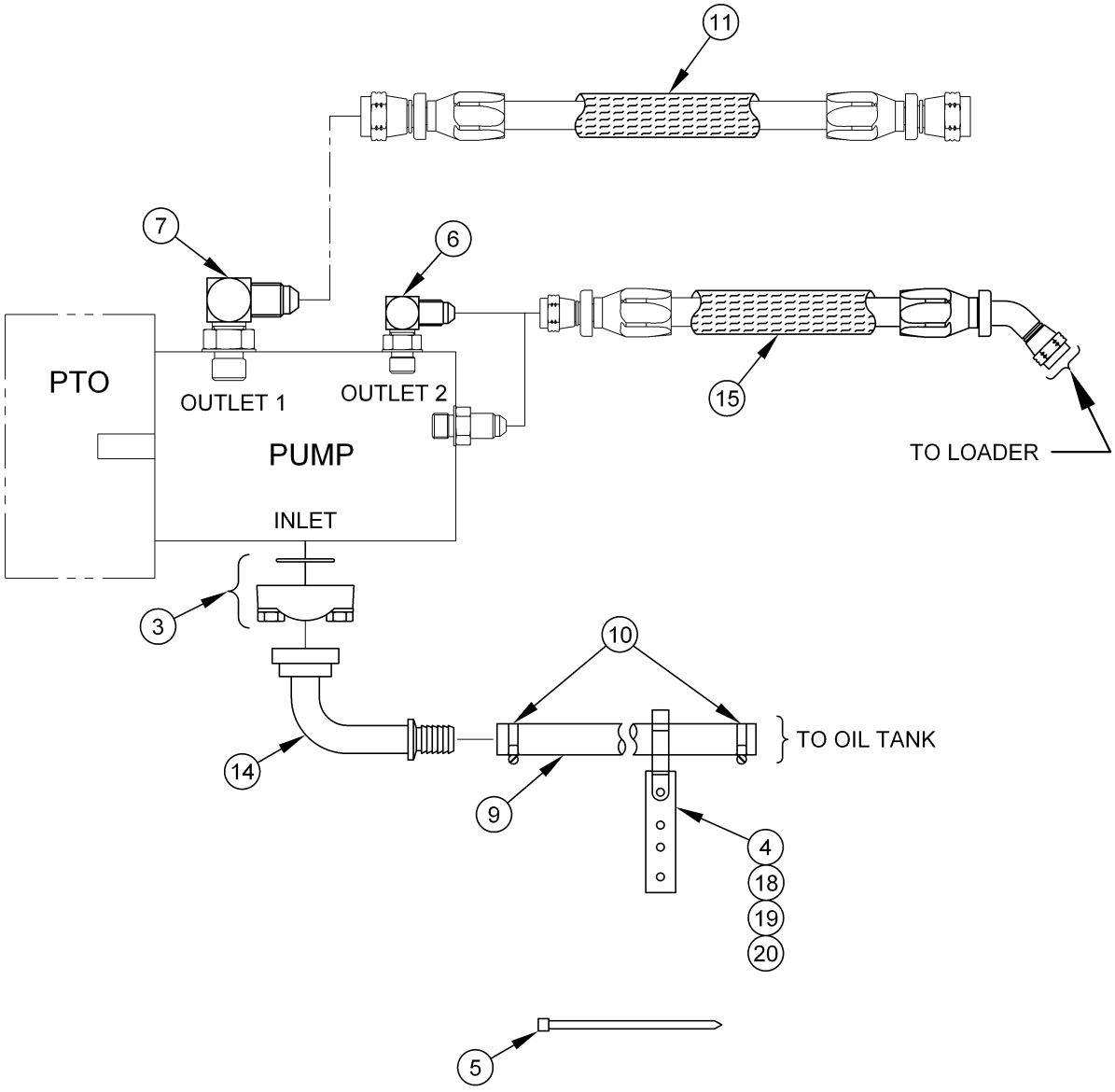
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	557-0005	KIT, PTO, Direct Mount, Vickers	-	REF
-1	219-1936	PUMP, Vane, Direct Mount, Vickers (See Section 5)	-	1
-2	272-6698-003	KIT, Pump, Hose, Direct Mount (See pg. 4033)	-	1
-3	372-1828	KIT, PLC, EOS Controller	-	1

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DIRECT MOUNT PUMP HOSE KIT

272-6698-003



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DIRECT MOUNT PUMP HOSE KIT

272-6698-003

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	272-6698-003	KIT, Hose, Pump, Direct Mount	-	REF
3	054-9709	KIT, Flange, Code 61, 2-1/2”	-	1
4	036-1492	HANGER, Universal	-	1
5	036-1640-204	TIE, Strap, Nylon	-	10
6	054-3340-008	ELBOW, 90°, Male, Tube to Str., 3/4"	-	1
7	054-3340-010	ELBOW, 90°, Male, Tube to Str. Thd., 7/8"-14	-	1
9	057-2172	HOSE, Suction, 2”	-	4
10	074-4498-032	CLAMP, Hose, Suction, 2”	-	4
11	057-2355-050	ASSEMBLY, Hose, 1” Female JIC-Female JIC	-	1
14	074-4583	ELBOW, 90°, 2-1/2”, Suction, 2”	-	1
15	057-2338-050	HOSE, Pressure, 3/4”, #12 FJIC, ST 45°	-	1
18	FSP070920	HHCS, 3/8”-16 x 1”, Gr. 5, Plated	-	1
19	FSP230900	NUT, Lock, 3/8”-16, Gr. 5, Plated	-	1
20	FSP520900	WASHER, Flat, 3/8’’, SAE, Plain	-	2

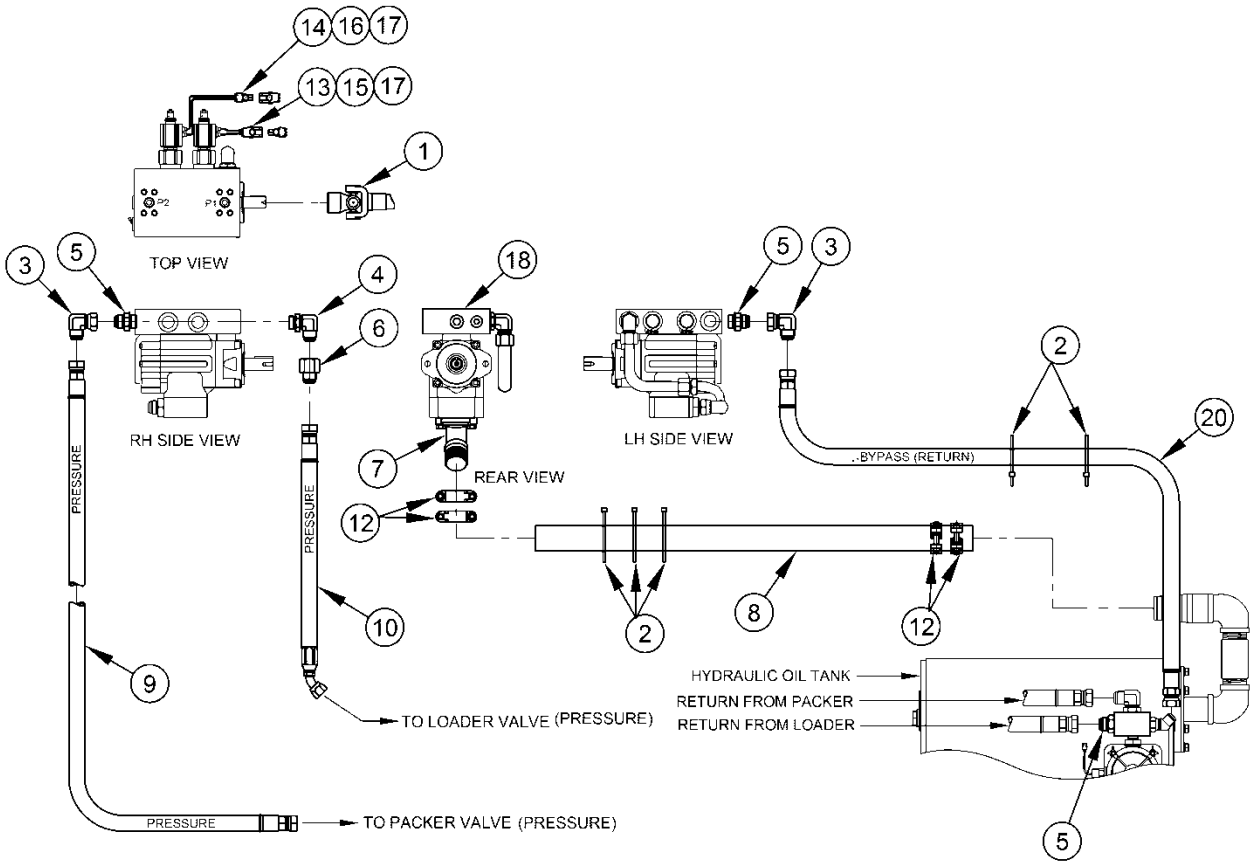
Note: 1, 2, 8, 12, 13, 16 and 17 are not available.

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DENSION OIG PTO MOUNT PUMP KIT

372-2978



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DENSION OIG PTO MOUNT PUMP KIT

372-2978

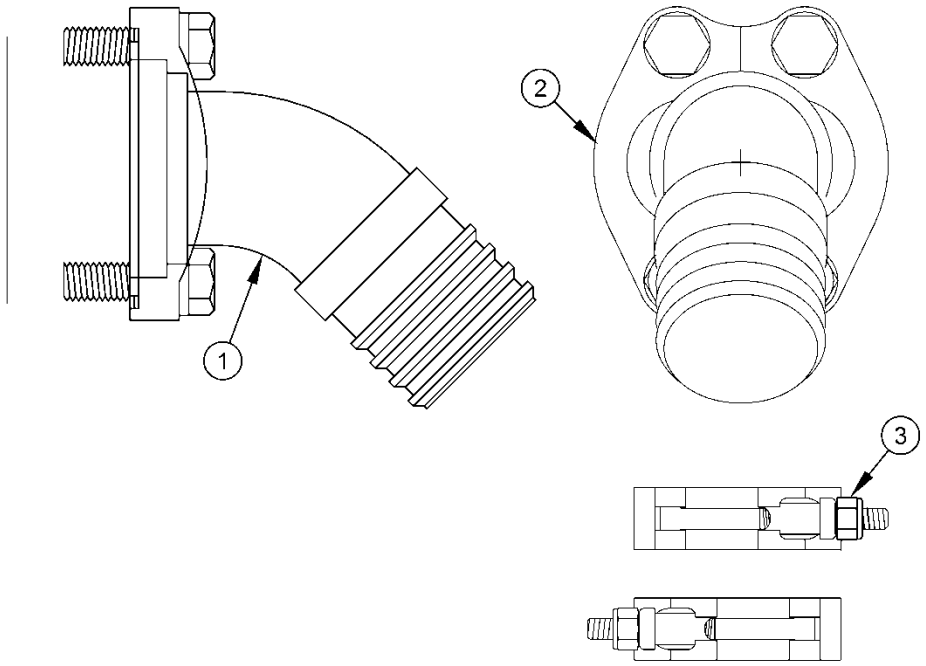
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-2978	KIT, Pump, PTO Mount, OIG, Denison	-	REF
1	-	DRIVELINE, 1-1/4” RD-1”	-	REF
2	036-1640-215	TIE, Cable, Heavy, 15”	-	30
3	054-2988-010	ELBOW, Female, 90°, Tube to Swivel, 1”, 37° Flare	-	2
4	054-3340-010	ELBOW, Male, 90°, Tube to Str. Thd., 1-5/16”-12 x 1", #16	-	1
5	054-3341-010	CONNECTOR, Male, Tube to Str., 1’’	-	3
6	054-6547-014	REDUCER, 1”Female JIC-3/4” Male JIC	-	1
7	054-8667	KIT, Suction, 45°, 2” (See Pg. 4037)	-	1
8	057-2172	HOSE, Suction, 2”	-	10’
9	057-2355-050	ASSEMBLY, Hose, 1” Female JIC-Female JIC	-	1
10	057-2338-072	ASSEMBLY, Hose, 3/4” Female JIC-45° Female JIC	-	1
-11	058-8579-006	FITTING, Split, Flange/NPT, 2”	-	1
12	074-4498-032	CLAMP, Hose, Suction, 2”	-	4
13	108-4827-003	CONNECTOR, Male, 2-Way, Packard	-	2
14	108-4827-004	CONNECTOR, Female, 2-Way, Packard	-	2
15	108-4827-111	TERMINAL, Male, 16-14 AWG, Packard	-	4
16	108-4827-121	TERMINAL, Female, 16-14 AWG, Packard	-	4
17	108-4827-132	SEAL, Cable, 16-14 AWG	-	8
18	219-2294	ASSEMBLY, Pump, T6CCZB25B25 (See Section 5)	-	1
-19	372-1828-001	GEAR, Run-In, Transmission Temperature	-	1
20	057-2355-086	ASSEMBLY, Hose, 1” Female JIC-Female JIC	-	1

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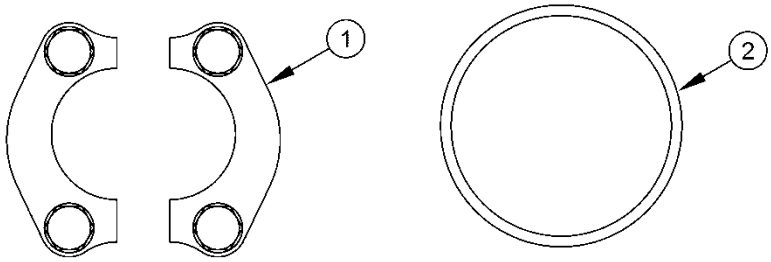
2" 45° SUCTION KIT

054-8667



4-BOLT FLANGE KIT

054-8736



FLANGE O-RING

HEIL NUMBER	SAE FLANGE SIZE	O-RING PART NO.	MIN DYNAMIC PRESSURE RATING
054-8736-001	1/2"	054-8736-010	5000 PSI
054-8736-002	3/4"	054-8736-011	5000 PSI
054-8736-003	1"	054-8736-012	5000 PSI
054-8736-004	1-1/4"	054-8736-013	4000 PSI
054-8736-005	1-1/2"	054-8736-014	3000 PSI
054-8736-006	2"	054-8668-005	2500 PSI
054-8736-007	2-1/2"	054-9888-003	2500 PSI

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2" 45° SUCTION KIT
054-8667

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	054-8667	KIT, Suction, 45°, 2”	-	REF
1	054-8667-001	ELBOW, Flange Head, SAE, 45°	-	1
2	054-8736-006	HALVES, Flange, 4-Bolt, 2”, SAE (See Pg. 4036)	-	1
3	074-4498-032	CLAMP, Hose, Suction, 2”	-	2

4-BOLT FLANGE KIT
054-8736

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	054-8736	KIT, Flange, 4-Bolt	-	REF
1	054-8736-xxx	FLANGE, 4-Bolt SAE, 2”	-	2
2	054-xxxx-xxx	O-RING, VITON, 2500 PSI	-	1

Note 1: Refer Table in Illustration for the customized PART NO. 054-8736-xxx
2: Refer Table in Illustration for the customized PART NO. 054-xxxx-xxx

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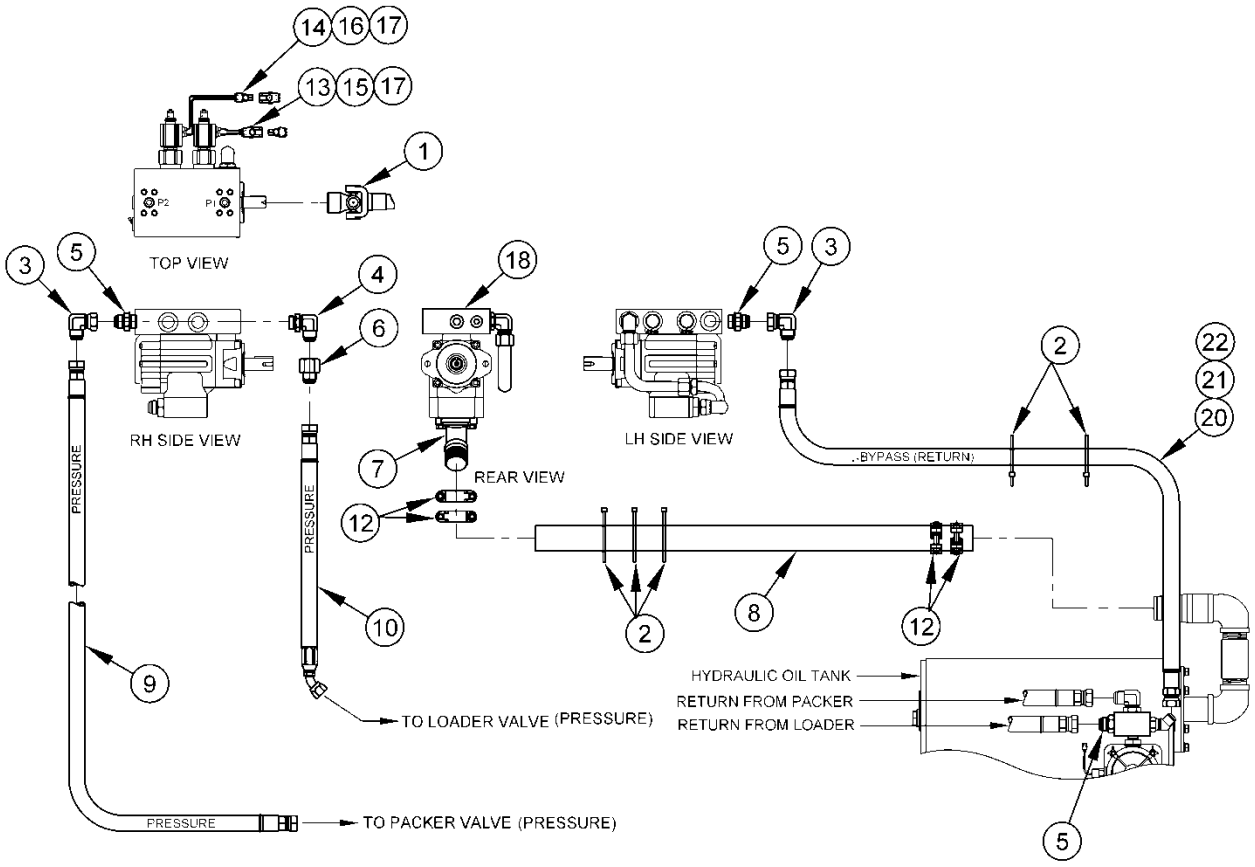
FRONT MOUNT PUMP KITS

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DENSION OIN FRONT MOUNT PUMP KIT

372-4651



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DENSION OIN FRONT MOUNT PUMP KIT

372-4651

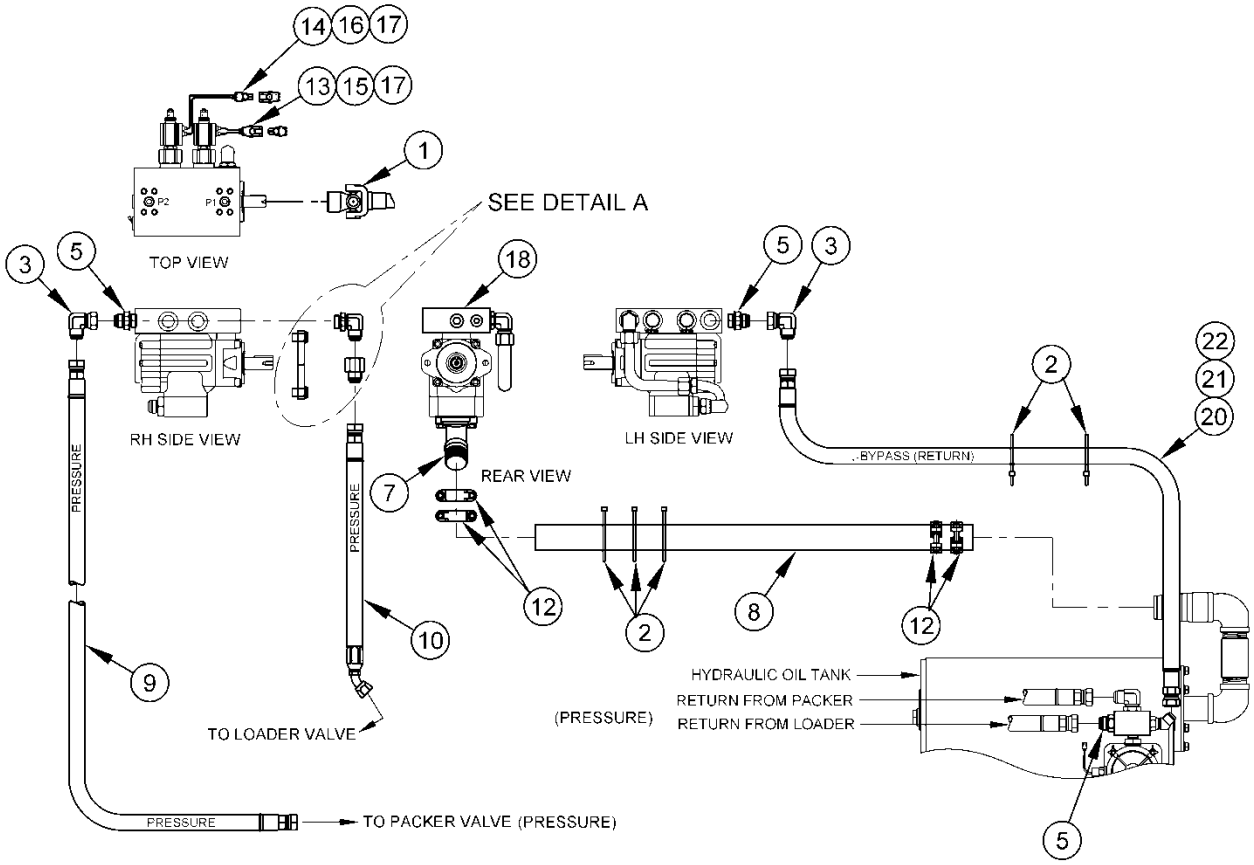
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-4651	KIT, Pump, Front Mount, OIN, Dension	-	REF
1	-	DRIVE LINE, 1-1/4” RD-1”	-	REF
2	036-1640-215	TIE, Cable, Heavy, 15”	-	30
3	054-2988-010	ELBOW, Female, 90°, Tube to Swivel, 1”, 37° Flare	-	2
4	054-3340-010	ELBOW, Male, 90°, Tube to Str. Thd. 1-5/16”-12 x 1", #16	-	1
5	054-3341-010	CONNECTOR, Male, Tube to Str., 1’’	-	3
6	054-6547-014	REDUCER, 1”Female JIC-3/4” Male JIC	-	1
7	054-8667	KIT, Suction, 45°, 2” (See Pg. 4037)	-	1
8	057-2172	HOSE, Suction, 2”	-	10’
9	057-2337-108	ASSEMBLY, Hose, 1” Female JIC-Female JIC	-	1
10	057-2338-096	ASSEMBLY, Hose, 3/4” Female JIC-45° Female JIC	-	1
-11	058-8579-006	FITTING, Suction Hose, Split Flange, 2” NPT	-	1
12	074-4498-032	CLAMP, Suction Line, 2’’	-	4
13	108-4827-003	CONNECTOR, Male, 2 Way, Packard	-	2
14	108-4827-004	CONNECTOR, Female, 2 Way, Packard	-	2
15	108-4827-111	TERMINAL, Male, 16-14 AWG, Packard	-	4
16	108-4827-121	TERMINAL, Female, 16-14 AWG, Packard	-	4
17	108-4827-132	SEAL, Cable, 16-14 AWG	-	8
18	219-2296	ASSEMBLY, Pump, T6CCZB25B14 (See Section 5)	-	1
-19	372-1828-001	GEAR, Run-In, Transmission Temperature	-	1
20	057-1719	HOSE, High Pressure, Female to Female, 1”	-	12’
21	057-1719-010	HOSE, High Pressure, 1" Female Fitting, 1-5/16"-12 Thd.	-	2
22	057-2727	GUARD, Fiber	-	12’

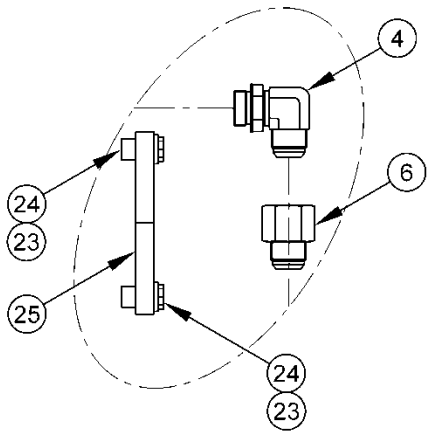
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DENSION OIG FRONT MOUNT PUMP KIT

372-2977





DETAIL A

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DENSION OIG FRONT MOUNT PUMP KIT

372-2977

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-2977	KIT, Pump, Front Mount, OIG, Dension	-	REF
1	-	DRIVELINE, 1-1/4” RD-1”	-	REF
2	036-1640-215	TIE, Cable, Heavy, 15”	-	30
3	054-2988-010	ELBOW, Female, 90°, Tube to Swivel, 1”, 37° Flare	-	2
4	054-3340-010	ELBOW, Male, 90°, Tube to Str. Thd., 1-5/16”-12 x 1", #16	-	1
5	054-3341-010	CONNECTOR, Male, Tube to Str., 1’’	-	3
6	054-6547-014	REDUCER, 1”Female JIC-3/4” Male JIC	-	1
7	054-8667	KIT, Suction, 45°, 2” (See Pg. 4037)	-	1
8	057-2172	HOSE, Suction, 2”	-	10’
9	057-2337-108	ASSEMBLY, Hose, 1” Female JIC-Female JIC	-	1
10	057-2338-096	ASSEMBLY, Hose, 3/4” Female JIC-45° Female JIC	-	1
-11	058-8579-006	FITTING, Suction Hose, Split Flange, 2” NPT	-	1
12	074-4498-032	CLAMP, Suction Line, 2’’	-	4
13	108-4827-003	CONNECTOR, Male, 2 Way, Packard	-	2
14	108-4827-004	CONNECTOR, Female, 2 Way, Packard	-	2
15	108-4827-111	TERMINAL, Male, 16-14 AWG, Packard	-	4
16	108-4827-121	TERMINAL, Female, 16-14 AWG, Packard	-	4
17	108-4827-132	SEAL, Cable, 16-14 AWG	-	8
18	219-2293	ASSEMBLY, Pump, T6CCZB25B25 (See Section 5)	-	1
-19	372-1828-001	GEAR, Run-In, Transmission Temperature	-	1
20	057-1719	HOSE, High Pressure, Female to Female, 1”	-	12’
21	057-1719-010	HOSE, High Pressure, 1" Female Fitting, 1-5/16"-12 Thd.	-	2
22	057-2727	GUARD, Fiber	-	12’
23	FS541000	WASHER, Lock, 7/16”, Plain	-	2
24	FSP071126	HHCS, 1/2"-13 x 1-3/4”, Gr. 5, Plated	-	2
25	074-4879-001	ADAPTER, Pump	-	1

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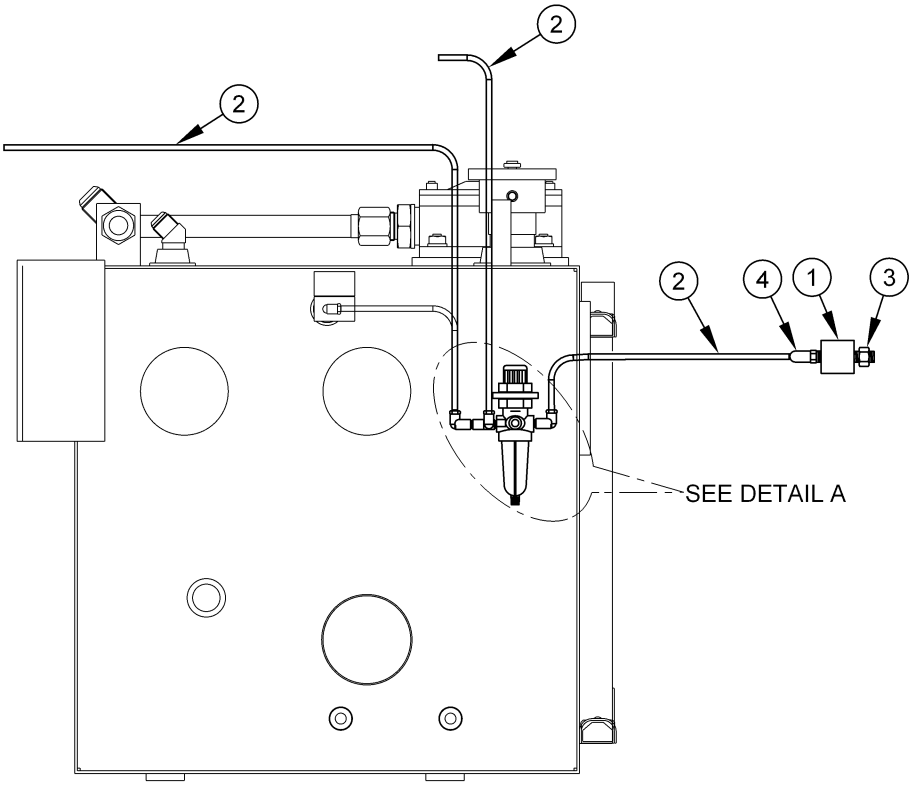
AIR SUPPLY KIT

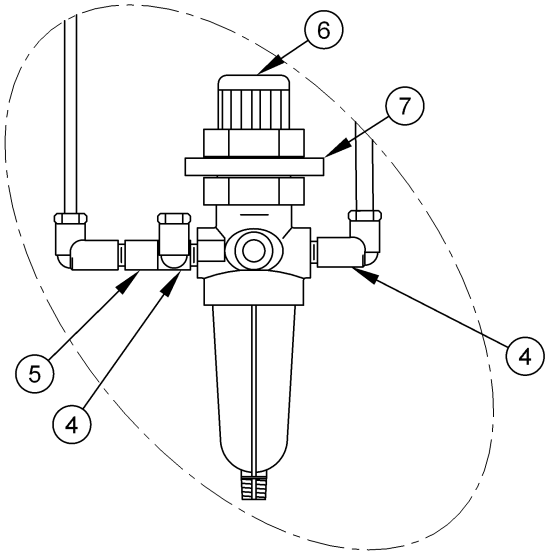
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AIR SUPPLY KIT

272-8228





DETAIL A

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AIR SUPPLY KIT

272-8228

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	272-8228	KIT, Air Supply	-	REF
1	031-1909	VALVE, Protection, Pressure	-	1
2	054-5449	TUBING, Air Line, 1/4", Nylon	-	50’
3	054-8927-0002	NIPPLE, Brass, Hex, 1/4" NPT	-	1
4	054-8470-003	ELBOW, Air Line Connection, 1/8” NPT-1/4”	-	4
5	054-8472-002	TEE, Air Line, 1/4"	-	1
6	075-0721	REGULATOR/FILTER, w/Gauge, 1/4" NPT	-	1
7	311-1647	BRACKET, Regulator, Chassis, 2” x 9/32” x 19/32”	-	1

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SECTION 5
HYDRAULIC COMPONENTS

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CYLINDERS

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AIR CYLINDER

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AIR CYLINDER

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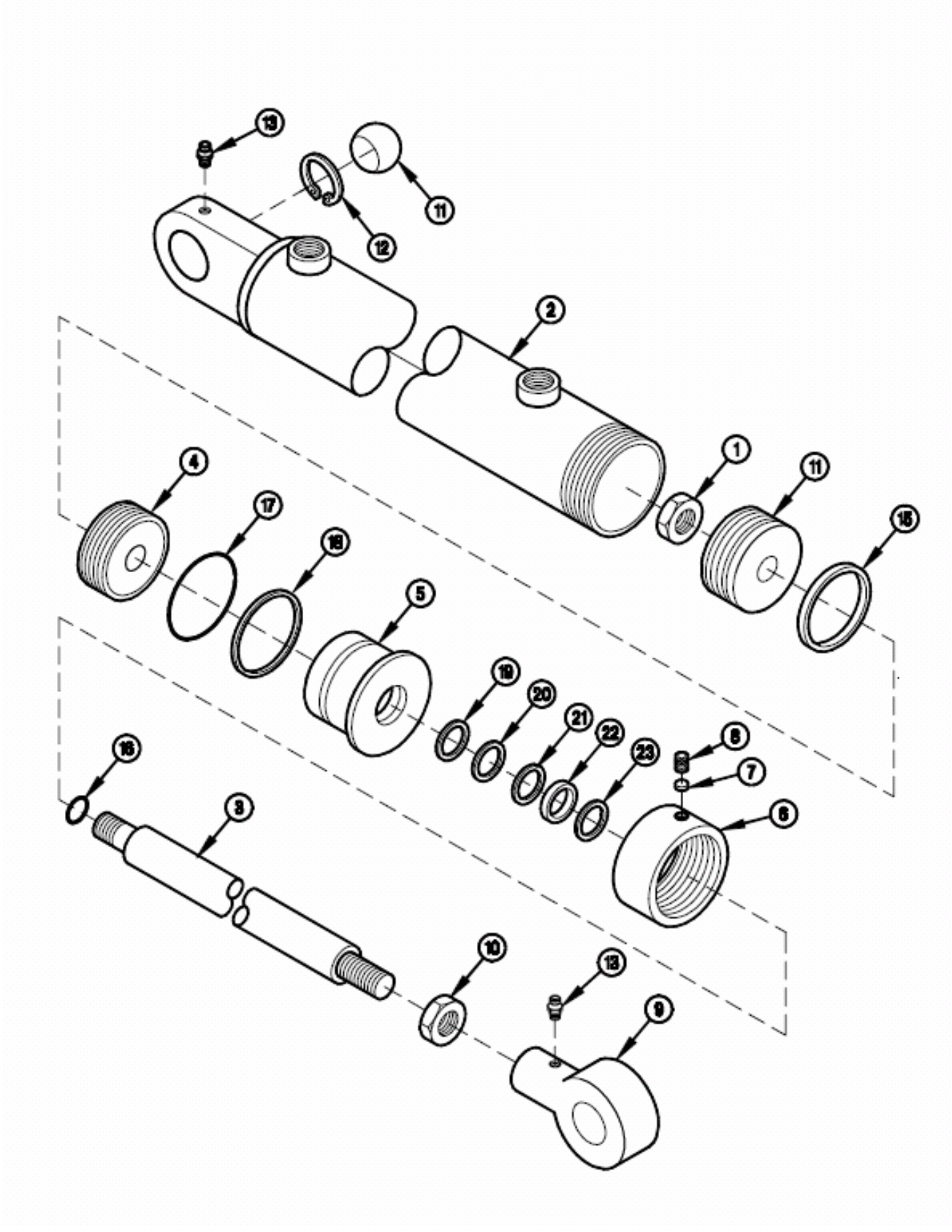
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	001-6393	CYLINDER, Air, 1-1/2” Bore x 2” Stroke	-	REF

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ARM RAISE CYLINDER

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ARM RAISE CYLINDER

001-6404

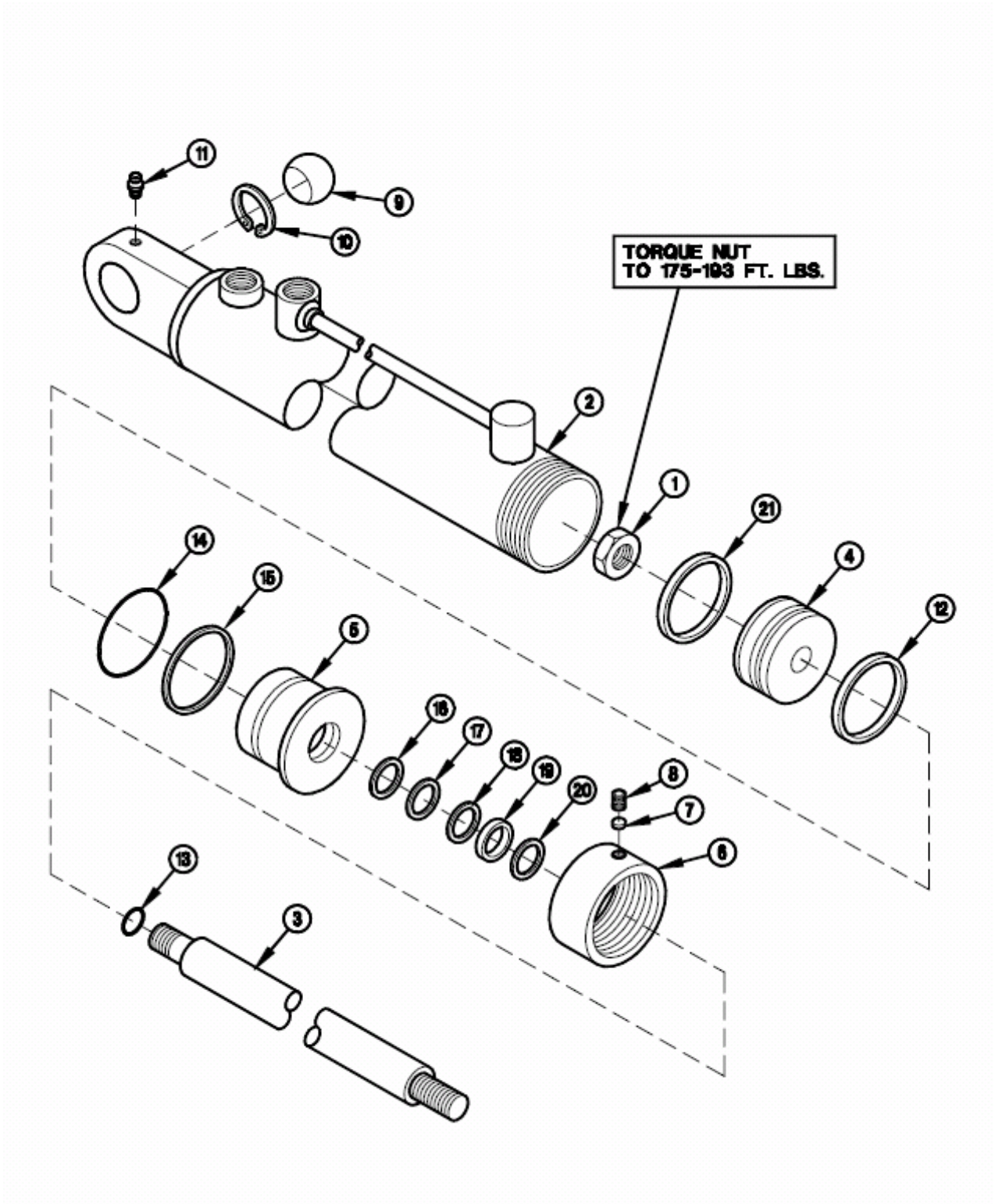
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	001-6404	CYLINDER, Arm, Raise	-	REF
1	001-5124-014	NUT, Lock, 3/4”-16	-	1
2	001-6404-001	ASSEMBLY, Barrel	-	1
3	001-6404-002	ROD	-	1
4	001-6404-003	PISTON	-	1
5	001-6404-004	GLAND	-	1
6	001-6160-012	COLLAR	-	1
7	047-1520	SLUG, nylon	-	1
8	001-6085-013	SET SCREW	-	1
9	001-6169-014	ASSEMBY, Rod, Mount	-	1
10	001-6169-003	NUT, Jam	-	1
11	003-4432	BEARING, Spherical	-	1
12	001-6402-006	RING, Snap	-	1
13	001-6165-001	FITTING, Grease	-	1
-	001-6404-100	KIT, Seal (Consists of Items 14 and 16-22)	-	A/R
14	001-6070-006	SEAL, Piston	-	1
15	001-6169-015	O-RING	-	1
16	026-2608-023	O-RING	-	1
17	026-4200-023	RING, Back-Up	-	1
18	001-6402-007	RING, Wear	-	1
19	001-6165-016	SEAL, Buffer	-	1
20	026-3980-002	SEAL, Rod	-	1
21	001-5082-008	WIPER, Canned	-	1
22	001-5097-004	RING, Retaining	-	1
23	001-6404-005	PISTON	-	1

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TAILGATE CYLINDER

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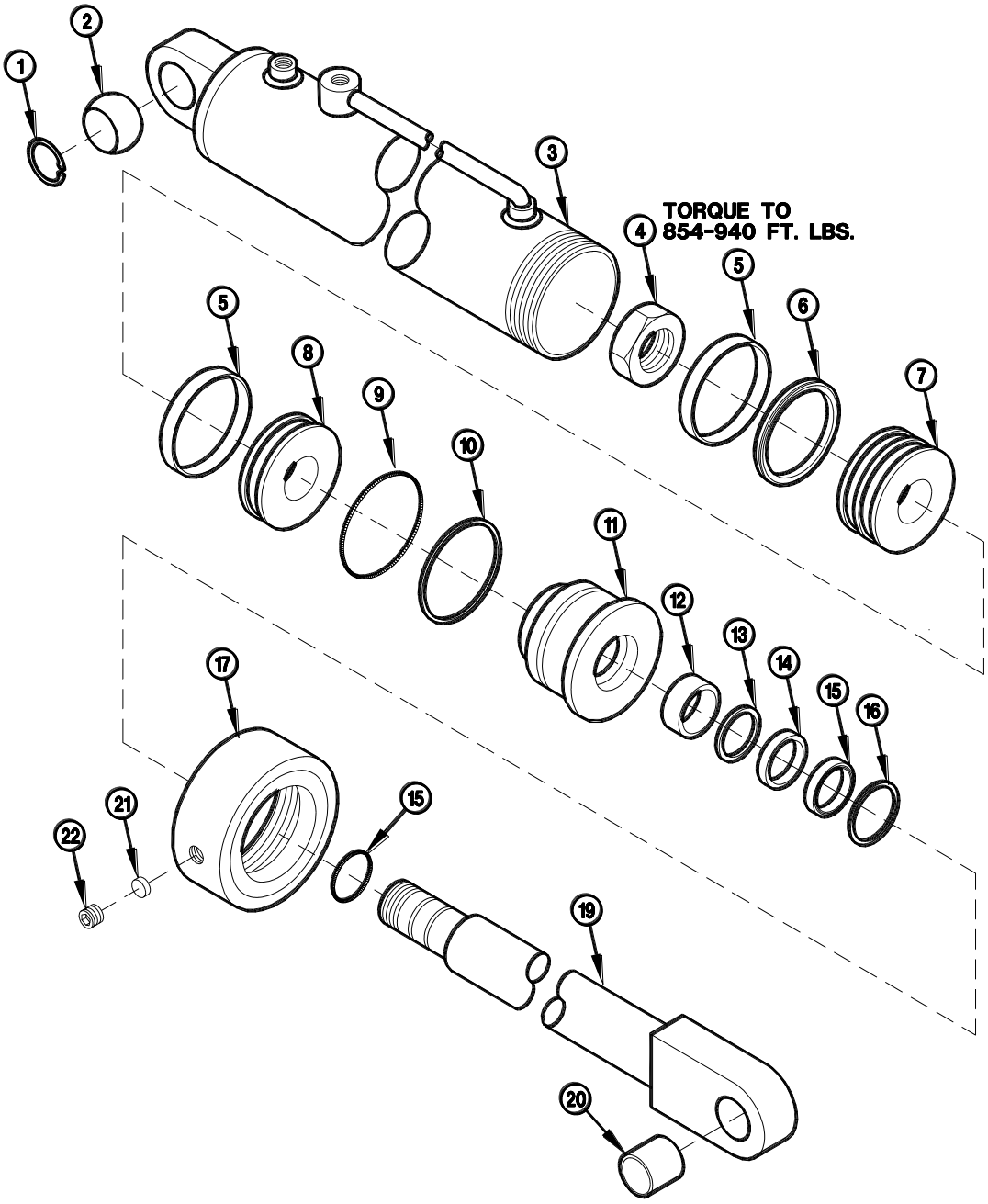
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	001-6405	CYLINDER, Tailgate	-	REF
1	001-5124-014	NUT, Lock, 3/4"-16	-	1
2	001-6405-001	ASSEMBLY, Barrel	-	1
3	001-6405-002	ROD	-	1
4	001-6405-003	PISTON	-	1
5	001-6405-004	GLAND	-	1
6	001-6160-012	COLLAR	-	1
7	047-1520	SLUG, Nylon	-	1
8	001-6085-013	SET SCREW	-	1
9	003-4806	BEARING, Spherical	-	1
10	001-6405-006	RING, Snap	-	1
11	001-6165-001	FITTING, Grease	-	1
-	001-6405-100	KIT, Seal (Consists of Items 12-21)	-	A/R
12	001-6405-007	SEAL, Piston	-	1
13	001-6169-015	O-RING	-	1
14	026-2608-023	O-RING	-	1
15	026-4200-023	RING, Back-Up	-	1
16	001-3793-013	RING, Wear	-	1
17	001-1665-016	SEAL, Buffer	-	1
18	001-3793-014	SEAL, Rod	-	1
19	001-3793-015	WIPER, Canned	-	1
20	001-3793-016	RING, Retaining	-	1
21	001-6093-009	RING, Wear	-	1

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PACKER CYLINDER

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PACKER CYLINDER

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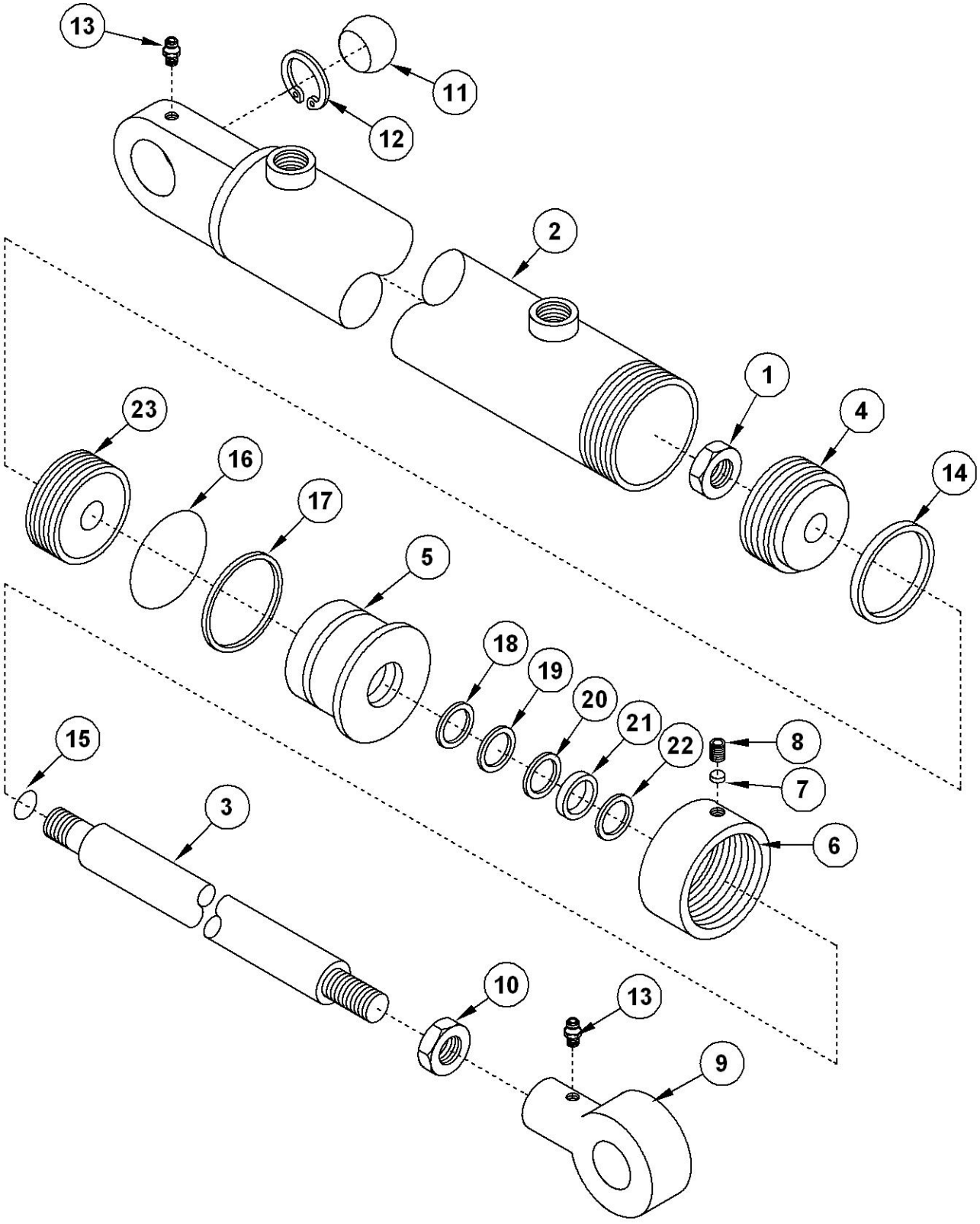
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	001-6406	CYLINDER, Packer	-	REF
1	026-2919-057	RING, Retaining	-	1
2	003-4432	BEARING, Spherical	-	1
3	001-6406-001	BARREL, Cylinder	-	1
4	001-5082-010	NUT, Lock, 1-1/4”-12	-	1
5	NSS	RING, Wear	-	2
6	NSS	SEAL, Piston	-	1
7	001-6406-003	PISTON	-	1
8	001-6406-006	PISTON	-	1
9	NSS	O-RING, Gland	-	1
10	NSS	RING, Back-Up	-	1
11	001-6406-004	GLAND	-	1
12	NSS	RING, Wear	-	1
13	NSS	SEAL, Buffer	-	1
14	NSS	SEAL, Rod	-	1
15	NSS	WIPER, Canned	-	1
16	NSS	RING, Retaining	-	1
17	001-6406-005	COLLAR	-	1
18	NSS	O-RING	-	1
19	001-6406-002	ASSEMBLY, ROD	-	1
20	001-6164-009	BUSHING	-	1
21	047-1520	SLUG, Nylon	-	1
22	001-6165-009	SETSCREW	-	1
-23	001-6406-100	KIT, Seal (Consists of Items 5, 6, 9, 10, 12-16 and 18)	-	A/R

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DUMP CYLINDER

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DUMP CYLINDER

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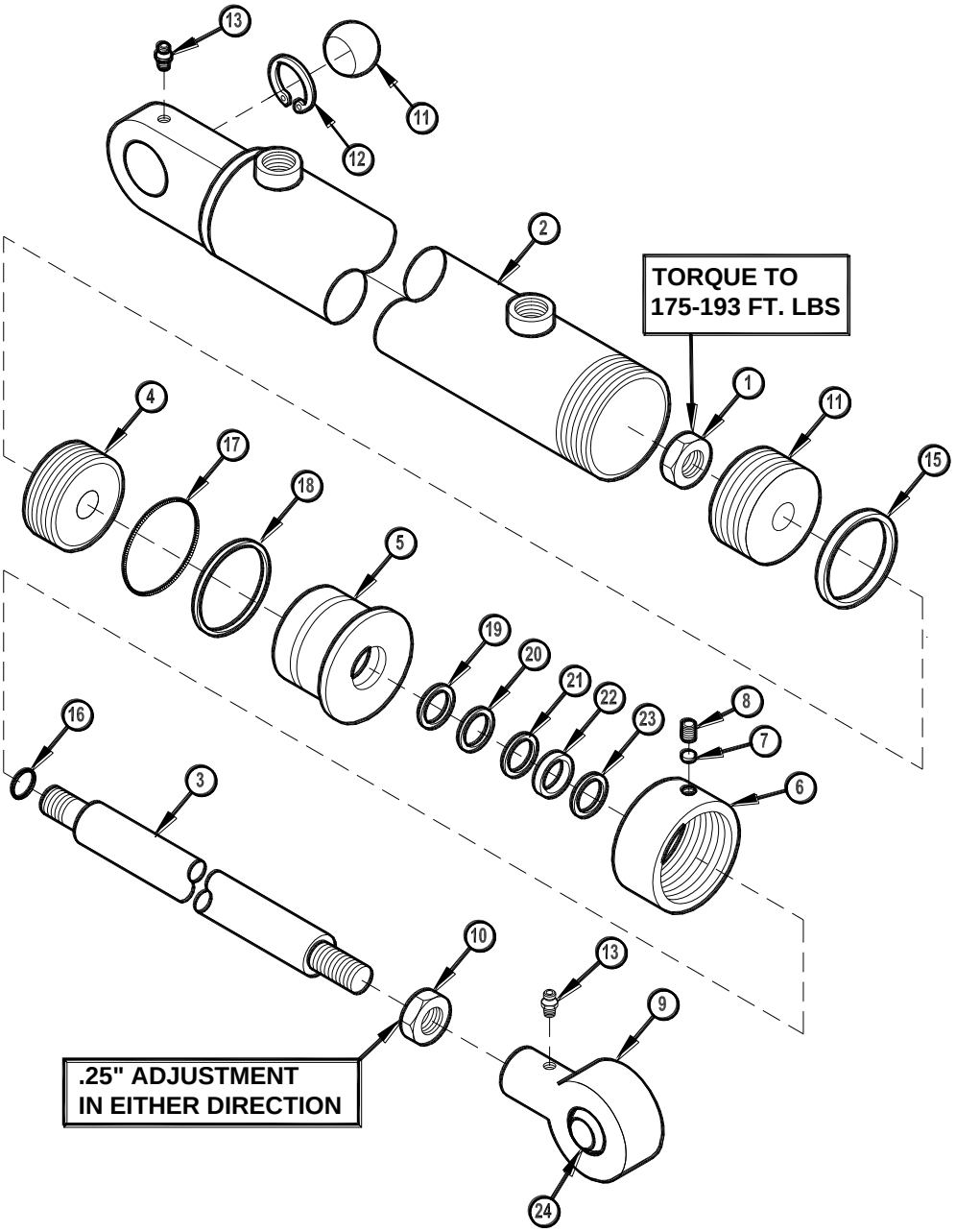
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	001-6407	CYLINDER, Dump	-	REF
1	001-5124-014	NUT, Lock, 3/4"-16	-	1
2	001-6407-001	ASSEMBLY, Barrel	-	1
3	001-6407-002	ROD	-	1
4	001-6407-003	PISTON	-	1
5	001-6407-004	GLAND	-	1
6	001-6160-012	COLLAR	-	1
7	047-1520	SLUG, Nylon	-	1
8	001-6085-013	SET SCREW	-	1
9	001-6407-005	ASSEMBLY, Rod, Mount	-	1
10	001-6402-005	NUT, Jam	-	1
11	003-4806	BEARING, Spherical	-	1
12	001-6402-006	RING, Snap	-	1
13	001-6165-001	FITTING, Grease	-	1
-	001-6402-100	KIT, Seal (Consists of items 14 and 16-22)	-	A/R
14	NSS	SEAL, Piston	-	1
15	001-6169-015	O-RING	-	1
16	NSS	O-RING	-	1
17	NSS	RING, Back-Up	-	1
18	NSS	RING, Wear	-	1
19	NSS	SEAL, Buffer	-	1
20	NSS	SEAL, Rod	-	1
21	NSS	WIPER, Canned	-	1
22	NSS	RING, Retaining	-	1
23	001-6407-007	PISTON	-	1

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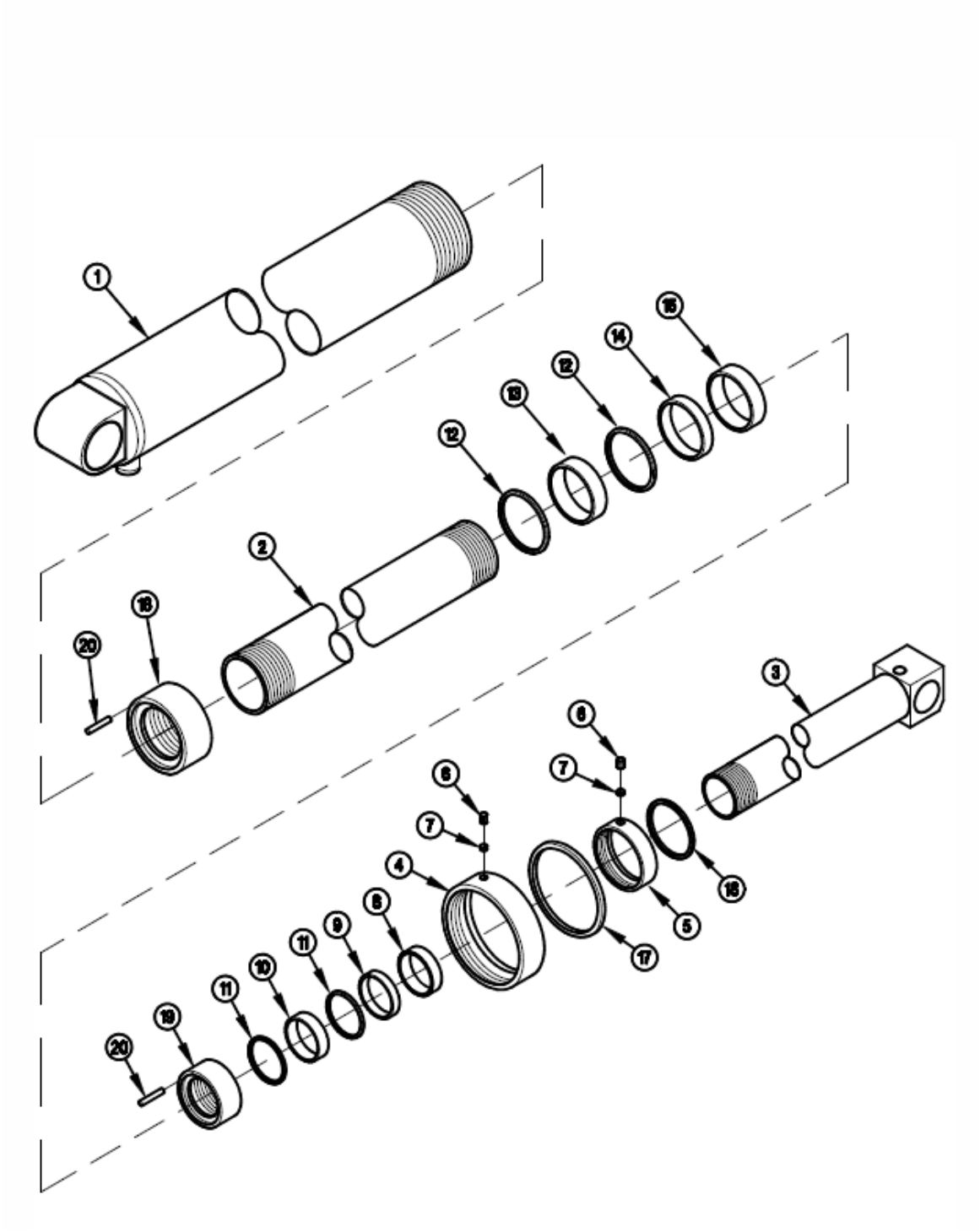
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	001-6416	CYLINDER, Grip	-	REF
1	001-5124-014	NUT, Lock, 3/4”-16 (Torque to 175-193 ft./lbs.)	-	1
2	001-6416-001	ASSEMBLY, Barrel	-	1
3	001-6402-002	ROD	-	1
4	001-6407-003	PISTON	-	1
5	001-6402-004	GLAND	-	1
6	001-6160-012	COLLAR	-	1
7	047-1520	SLUG, Nylon	-	1
8	001-6085-013	SET SCREW	-	1
9	001-6169-014	ASSEMBLY, Rod, Mount (Includes Items 13 and 24)	-	1
10	001-6402-005	NUT, Jam (0.25” Adjustment in Either Direction)	-	1
11	003-4432	BEARING, Spherical	-	1
12	001-6402-006	RING, Snap	-	1
13	FSP190400	FITTING, Grease	-	2
14	NSS	SEAL, Piston	-	1
15	001-6169-015	O-RING	-	1
16	NSS	O-RING	-	1
17	NSS	RING, Back-Up	-	1
18	NSS	RING, Wear	-	1
19	NSS	SEAL, Buffer	-	1
20	NSS	SEAL, Rod	-	1
21	NSS	WIPER, Canned	-	1
22	NSS	RING, Retaining	-	1
23	001-6407-007	PISTON	-	1
24	NSS	BEARING, Spherical (Order Item 9)	-	1
-25	001-6402-100	KIT, Seal-(Consists of Items 14, 16-22)	-	A/R

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BODY HOIST CYLINDER

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BODY HOIST CYLINDER

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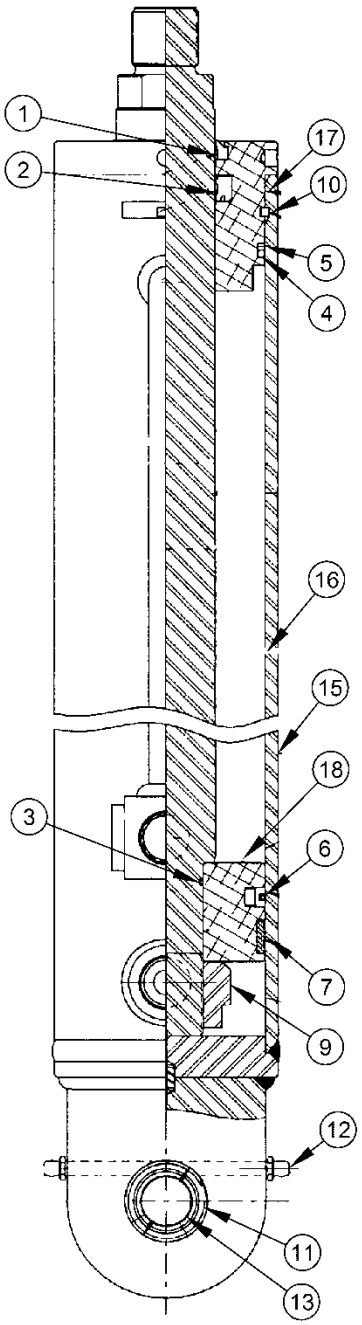
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	001-6445	CYLINDER, Body Hoist	-	REF
1	001-6445-001	ASSEMBLY, Barrel	-	1
2	001-6445-002	TUBE, 4”	-	1
3	001-6191-002	ASSEMBLY, Plunger, 3-1/4”	-	1
4	001-6445-010	GLAND, Retainer	-	1
5	001-6445-011	GLAND, Retainer	-	1
6	FSP440909	SET SCREW, Socket Hd., 3/8”-16, Plated	-	2
7	047-1520	SLUG	-	2
-	272-8491	KIT, Seal (Consists of Items 8-17)	-	A/R
8	NSS	RING, Guide, Upper	-	1
9	NSS	SEAL, Rod, U-Cup	-	1
10	NSS	RING, Guide, Lower	-	1
11	NSS	RING, Retaining	-	2
12	NSS	RING, Retaining	-	2
13	NSS	RING, Guide, Lower	-	1
14	NSS	SEAL, Rod, U-Cup	-	1
15	NSS	RING, Guide, Upper	-	1
16	NSS	WIPER	-	1
17	NSS	WIPER	-	1
18	026-2152	PISTON	-	1
19	026-2696	PISTON	-	1
20	048-5049	PIN, Grooved	-	2

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TAILGATE CYLINDER

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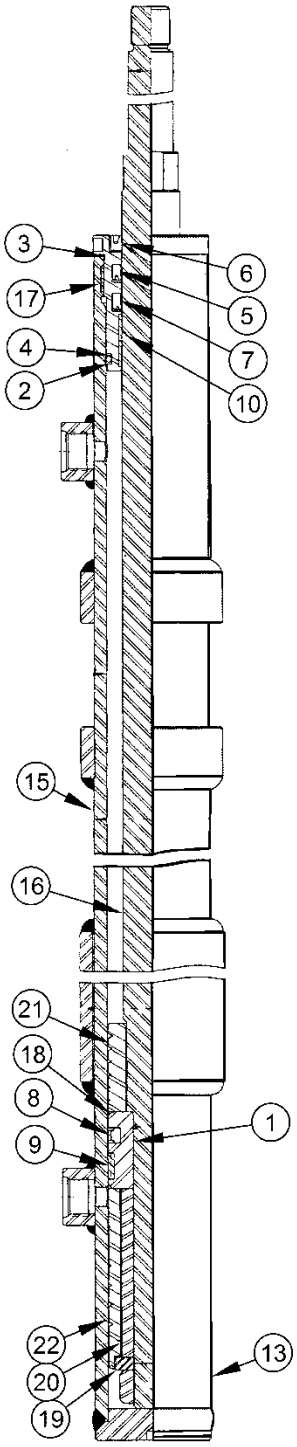
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	001-6754	CYLINDER, Tailgate	-	REF
-	001-6754-001	KIT, Seal (Consists of Items 1-7)	-	1
1	NSS	WIPER	-	1
2	NSS	SEAL	-	1
3	NSS	O-RING	-	1
4	NSS	O-RING	-	1
5	NSS	RING, Back-Up	-	1
6	NSS	SEAL	-	1
7	NSS	RING, Wear	-	1
8	001-6654-011	NUT, Lock (Torque to 375-450 ft./lbs.)	-	1
9	001-6754-003	RING, Retaining	-	1
10	001-6754-004	RING, Retaining	-	1
11	001-6754-005	FITTING, Grease	-	2
12	001-6754-006	BEARING, Spherical	-	1
13	001-6754-007	BARREL	-	1
14	001-6754-008	ROD	-	1
15	001-6754-009	HEAD	-	1
16	001-6754-010	PISTON	-	1

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IN/OUT CYLINDER

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IN/OUT CYLINDER

001-6757

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	001-6757	CYLINDER, In/Out	-	REF
-	001-6757-001	KIT, Seal (Consists of Items 1-10)	-	1
1	NSS	O-RING	-	1
2	NSS	O-RING	-	1
3	NSS	O-RING	-	1
4	NSS	RING, Back-Up	-	1
5	NSS	SEAL	-	1
6	NSS	WIPER	-	1
7	NSS	SEAL	-	1
8	NSS	SEAL	-	1
9	NSS	RING, Wear	-	1
10	NSS	RING, Wear	-	2
12	001-6757-002	SET SCREW	-	2
13	001-6757-003	NUT, Lock (Torque to 100-120 ft./lbs.)	-	1
15	001-6757-004	ASSEMBLY, Tube	-	1
16	001-6757-005	ROD	-	1
17	001-6757-006	HEAD	-	1
18	001-6757-007	PISTON	-	1
19	001-6757-008	WASHER	-	1
20	001-6757-009	SPACER	-	1
21	001-6757-010	SLEEVE, Cushion	-	1
22	001-6757-011	SLEEVE, Cushion	-	1

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GRIP CYLINDER

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GRIP CYLINDER

001-6829

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	001-6829	CYLINDER, Grip	-	REF

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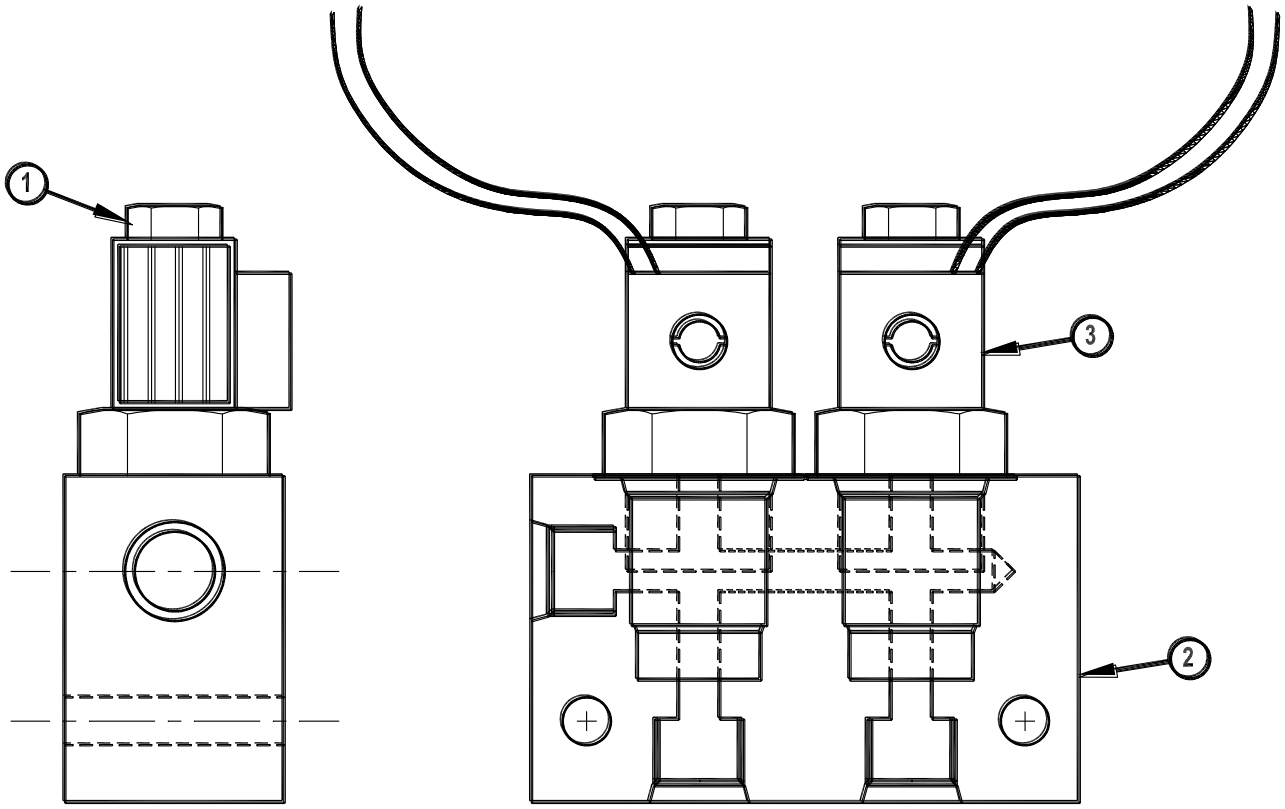
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TAILGATE SELECTOR VALVE

031-6074



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TAILGATE SELECTOR VALVE

031-6074

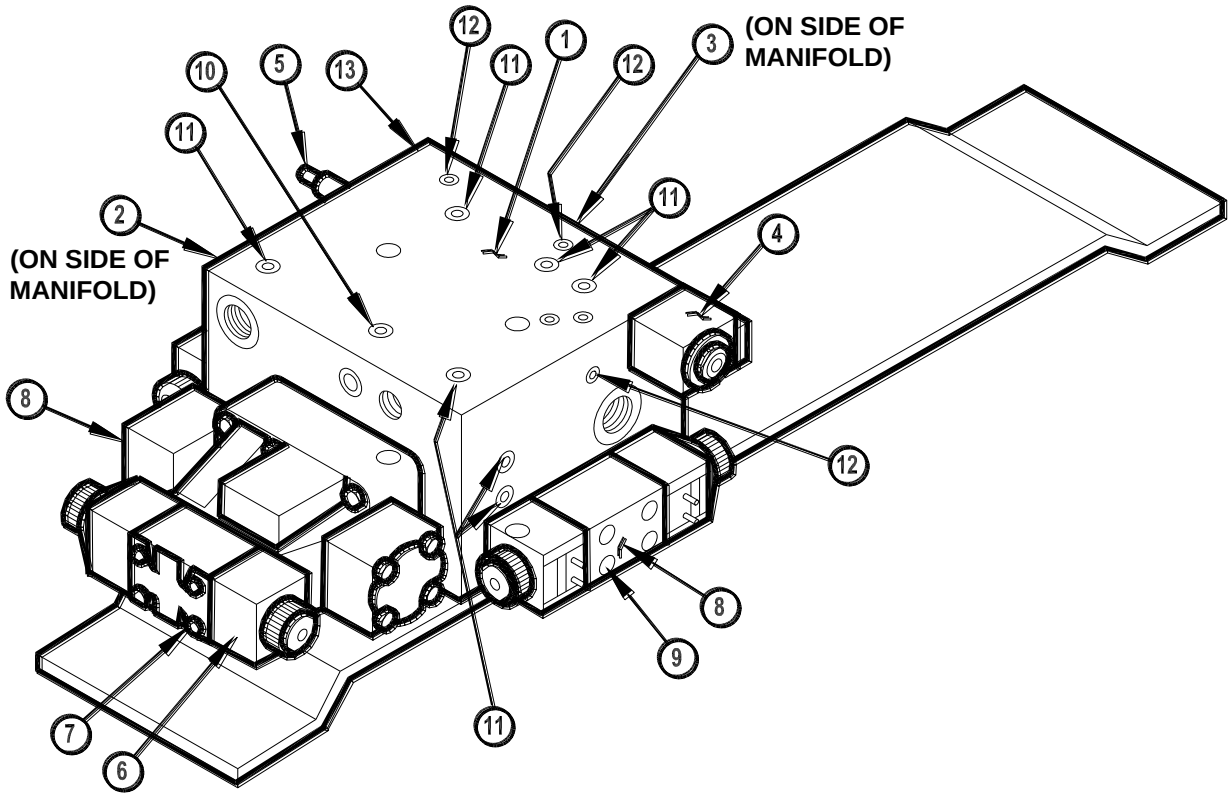
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	031-6074	VALVE, Selector, Tailgate	-	REF
1	031-6074-001	CARTRIDGE, Valve	-	2
2	031-6074-002	BLOCK	-	1
3	031-6074-003	COIL	-	2

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BODY VALVE

031-6194



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BODY VALVE

031-6194

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	031-6194	VALVE, Body	-	REF
1	NSS	MAINFOLD	-	1
2	031-6194-002	VALVE, Check	-	1
-	031-6194-013	KIT, Seal, Cartridge	-	1
3	031-6194-003	VALVE, Sensing, Differential Pressure	-	1
-	031-6194-014	KIT, Seal, Cartridge	-	1
4	031-6194-004	VALVE, Solenoid	-	1
-	031-6194-015	KIT, Seal, Cartridge	-	1
5	031-6194-005	VALVE, Relief (Set @ 2400 PSI)	-	1
-	031-6194-016	KIT, Seal, Cartridge	-	1
6	031-6194-006	VALVE, Pilot Operated, Directional Control	-	1
7	031-6194-007	KIT, Bolt	-	1
8	031-6194-008	VALVE, Control, Directional	-	2
9	031-6194-009	KIT, Bolt	-	2
10	031-6194-010	PLUG, SAE	-	2
11	219-1918-015	PLUG, SAE	-	8
12	031-6194-011	PLUG, SAE	-	7
13	031-6190-006	PLUG, SAE	-	1
-14	031-6194-012	PLUG, Orifice	-	1

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GRESON LOADER VALVE

031-6283

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GRESON LOADER VALVE

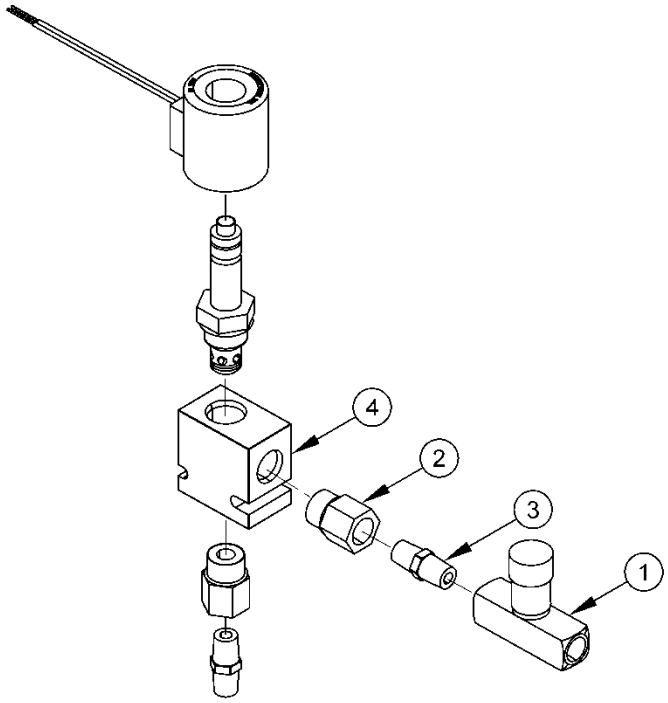
031-6283

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	031-6283	VALVE, Loader, Greson	-	REF

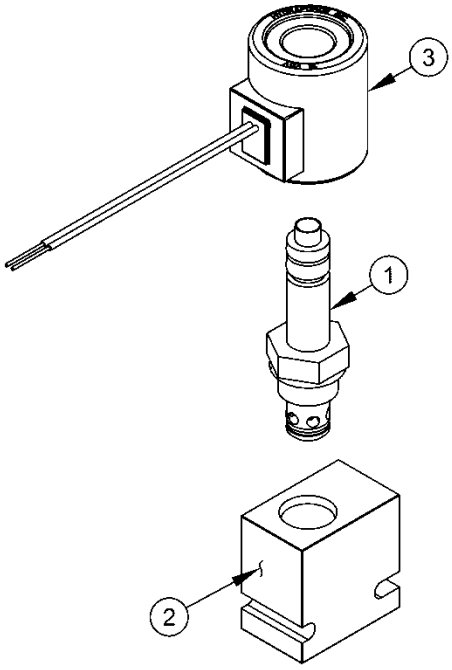
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FINESSE VALVE ASSEMBLY
372-0971



SOLENOID VALVE ASSEMBLY
372-2029



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FINESSE VALVE ASSEMBLY
372-0971

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-0971	ASSEMBLY, Valve, Finesse	-	REF
1	031-6234	VALVE, Needle, Flow Control	-	REF
2	054-6468-003	ADAPTER, Str. Thd.	-	REF
3	054-8927-002	NIPPLE, Brass, Hex, 1/4" NPT	-	REF
4	372-2029	ASSEMBLY, Valve, Solenoid (See Pg. 5033)	-	REF

SOLENOID VALVE ASSEMBLY
372-2029

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-2029	ASSEMBLY, Valve, Solenoid	-	REF
1	031-6235	CARTRIDGE, Valve, Finesse	-	REF
2	031-6236	BODY, Valve, Finesse	-	REF
3	108-7678	COIL, Valve, Finesse	-	REF

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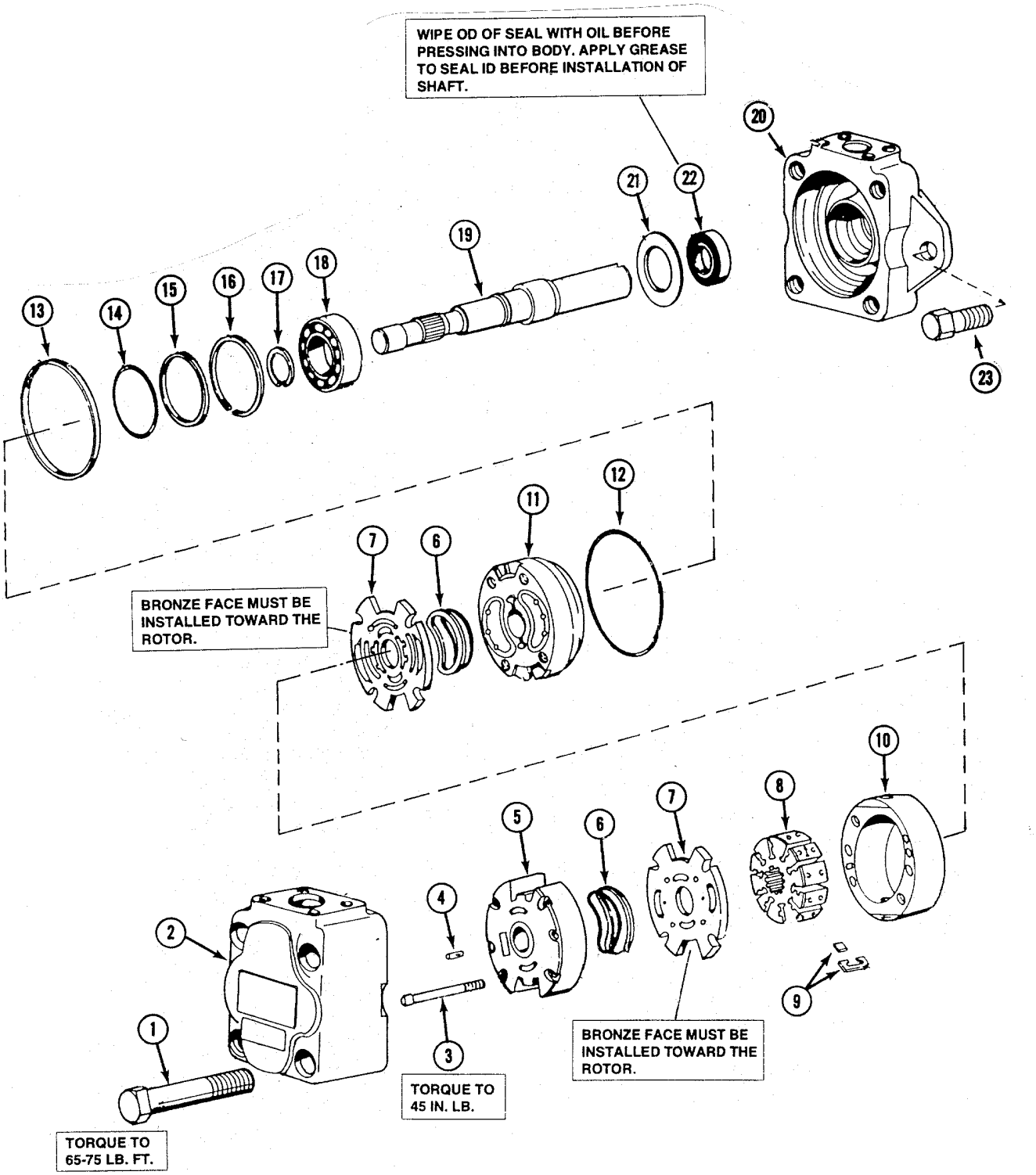
PUMPS

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VICKERS VANE PUMP

219-1936



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VICKERS VANE PUMP

219-1936

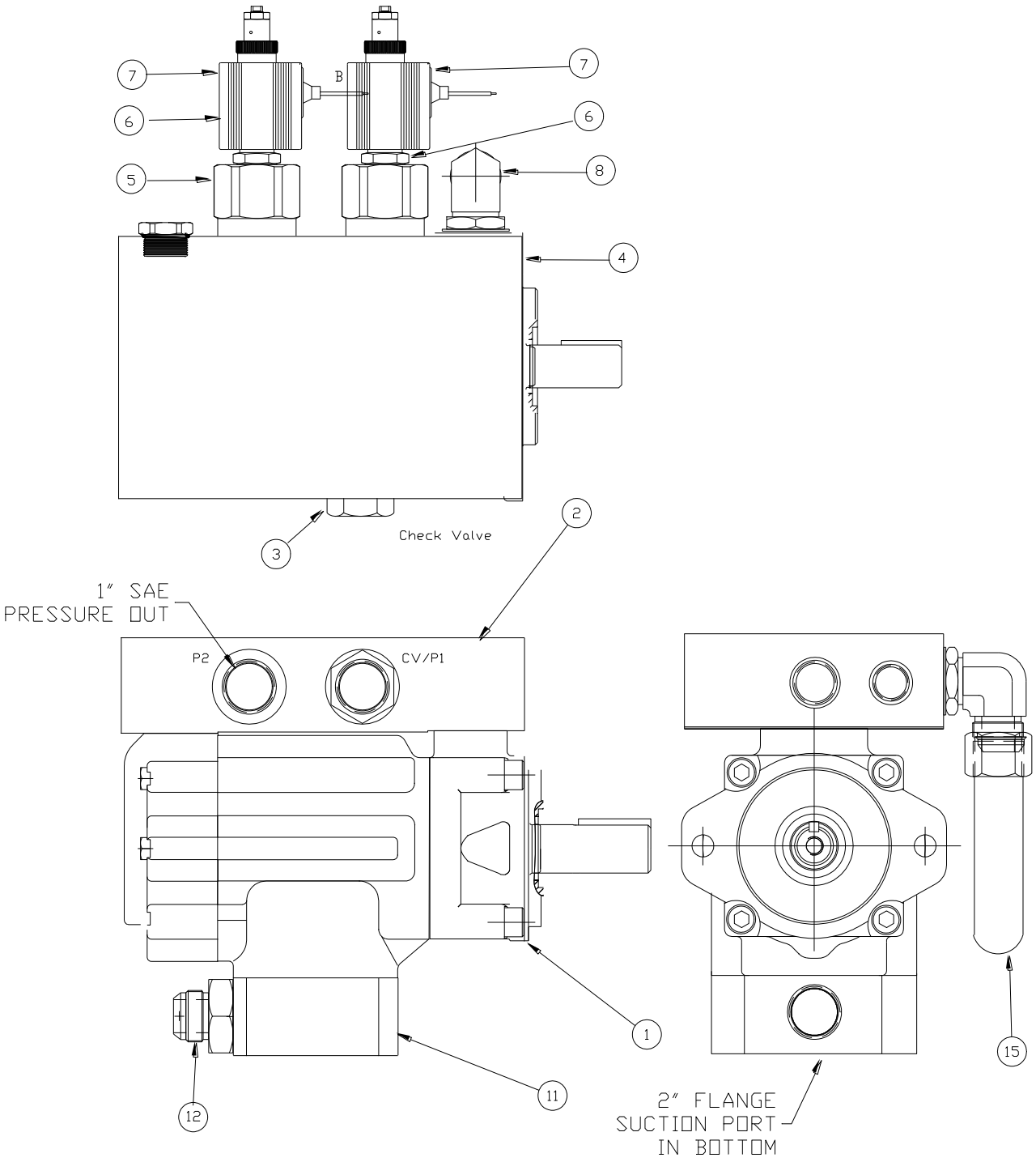
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	219-1936	PUMP, Vane, Vickers	-	REF
1	219-1950-027	SCREW	-	4
2	219-1936-001	COVER	-	1
-	219-1950-052	KIT, Cartridge (Consists of Items 3-15)	-	A/R
3	NSS	SCREW	-	2
4	NSS	PIN	-	2
5	NSS	PLATE, Inlet, Support	-	1
-	219-1936-004	KIT, Seal, Single Shaft (Consists of Items 6, 12-15 and 22)	-	A/R
6	NSS	PACK, Seal	-	4
7	219-1950-033	KIT, Plate, Flex-Side	-	1
8	NSS	ROTOR	-	1
9	219-1950-035	KIT, Vane (Consists of 10 Vanes and 10 Inserts)	-	1
10	NSS	RING	-	1
11	NSS	PLATE, Outlet, Support	-	1
12	NSS	O-RING	-	1
13	NSS	SEALING, Ring	-	1
14	NSS	O-RING	-	1
15	NSS	RING, Back-Up	-	1
16	219-1950-042	RING, Snap	-	1
17	219-1950-043	RING, Snap	-	1
18	219-1950-044	BEARING	-	1
19	219-1936-002	SHAFT	-	1
20	219-1950-050	BODY	-	1
21	219-1950-047	WASHER	-	1
22	NSS	SEAL, Shaft	-	1
23	219-1936-003	SCREW	-	2

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TANDEM VANE PUMP ASSEMBLY

219-2293, 219-2294



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TANDEM VANE PUMP ASSEMBLY

219-2293, 219-2294

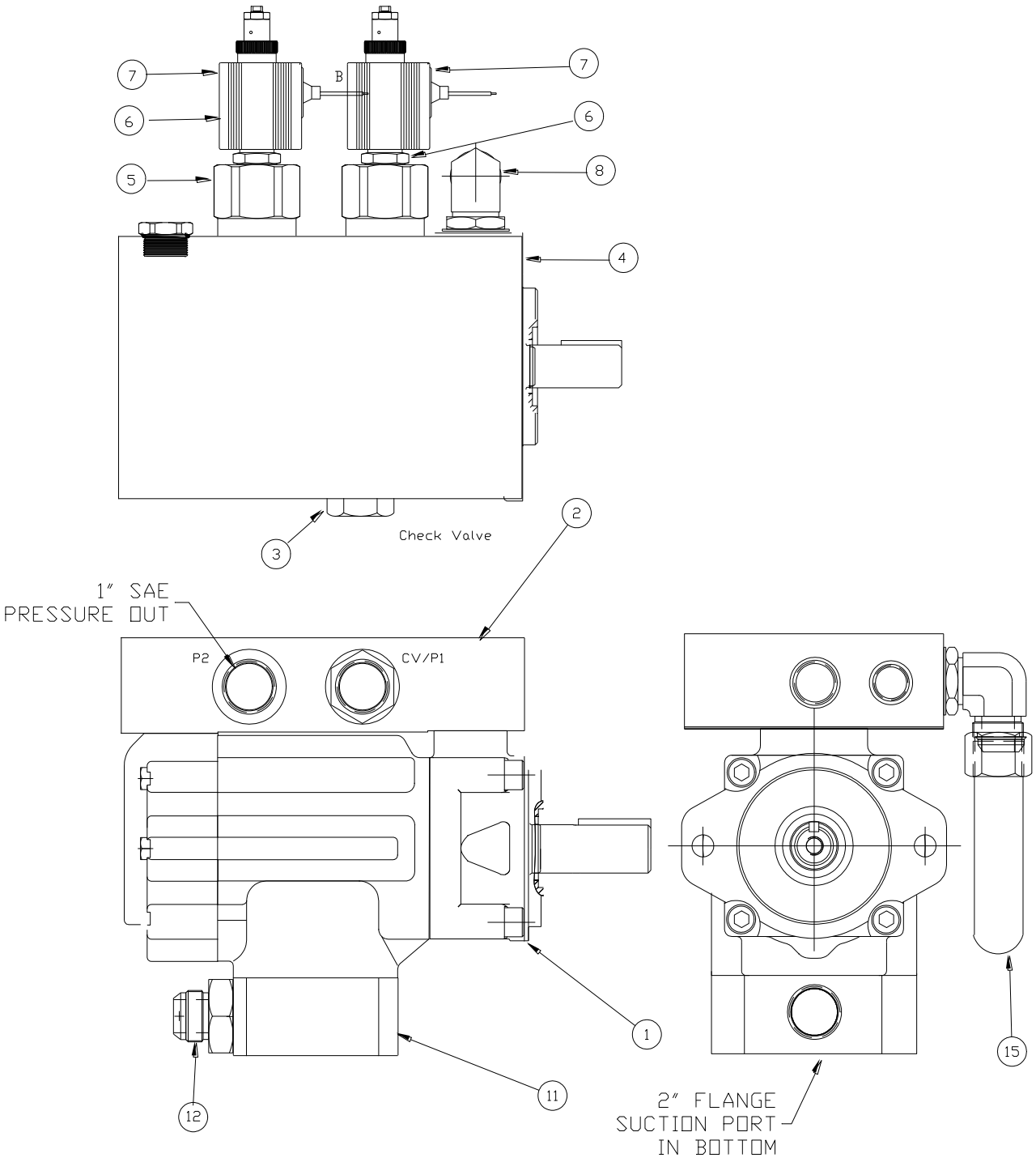
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	219-2293	ASSEMBLY, Pump, Front Mount	A	REF
-	219-2294	ASSEMBLY, Pump, PTO Mount	B	REF
1	219-2076-001	PUMP, Hydraulic, Front Mount	A	1
-1a	219-2290	PUMP, Hydraulic, PTO Mount	B	1
2	031-6379	BLOCK, Divided Flow	-	1
4	031-6375-002	BLOCK	-	1
5	031-6375-003	VALVE, Logic (2 way)	-	2
6	031-6375-004	VALVE, Solenoid, NO	-	2
7	031-6375-005	COIL, 12V w/Leads	-	2
8	031-6375-006	ELBOW, 90°	-	1
9	031-6375-007	O-RING (block to pump)	-	1
10	031-2256-010	CAPSCREW, 3/8”-16 x 2-1/2”	A	8
-10a	031-2256-011	WASHER, Lock, 3/8”	B	8
11	031-6376	BLOCK, Inlet	-	1
12	031-6376-001	ADAPTER	-	1
13	031-6375-007	O-RING (block to pump)	-	1
14	031-2256-010	CAPSCREW, 3/8”-16 x 2-1/2”	A	4
-14a	031-2256-011	WASHER, Lock, 3/8”	B	4
15	219-2288-001	TUBE, Bypass	-	1

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FRONT MOUNT PUMP ASSEMBLY

219-2296



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FRONT MOUNT PUMP ASSEMBLY

219-2296

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	219-2296	ASSEMBLY, Pump, Front Mount	-	REF
1	219-2296-001	PUMP, Hydraulic, PTO Mount	-	1
2	031-6379	BLOCK, Divided Flow	-	1
4	031-6375-002	BLOCK	-	1
5	031-6375-003	VALVE, Logic (2 Way)	-	2
6	031-6375-004	VALVE, Solenoid, NO	-	2
7	031-6375-005	COIL, 12 V, w/leads	-	2
8	031-6375-006	ELBOW, 90°	-	1
9	031-6375-007	O-RING (Block To Pump)	-	1
10	031-2256-010	CAPSCREW, 3/8”-16 x 2-1/2”	-	8
	031-2256-011	WASHER, Lock, 3/8”	-	8
11	031-6376	BLOCK, Inlet	-	1
12	031-6376-001	ADAPTER	-	1
13	031-6375-007	O-RING (Block To Pump)	-	1
14	031-2256-010	CAPSCREW, 3/8”-16 x 2-1/2”	-	4
	031-2256-011	WASHER, Lock, 3/8”	-	4
15	219-2288-001	TUBE, Bypass	-	1

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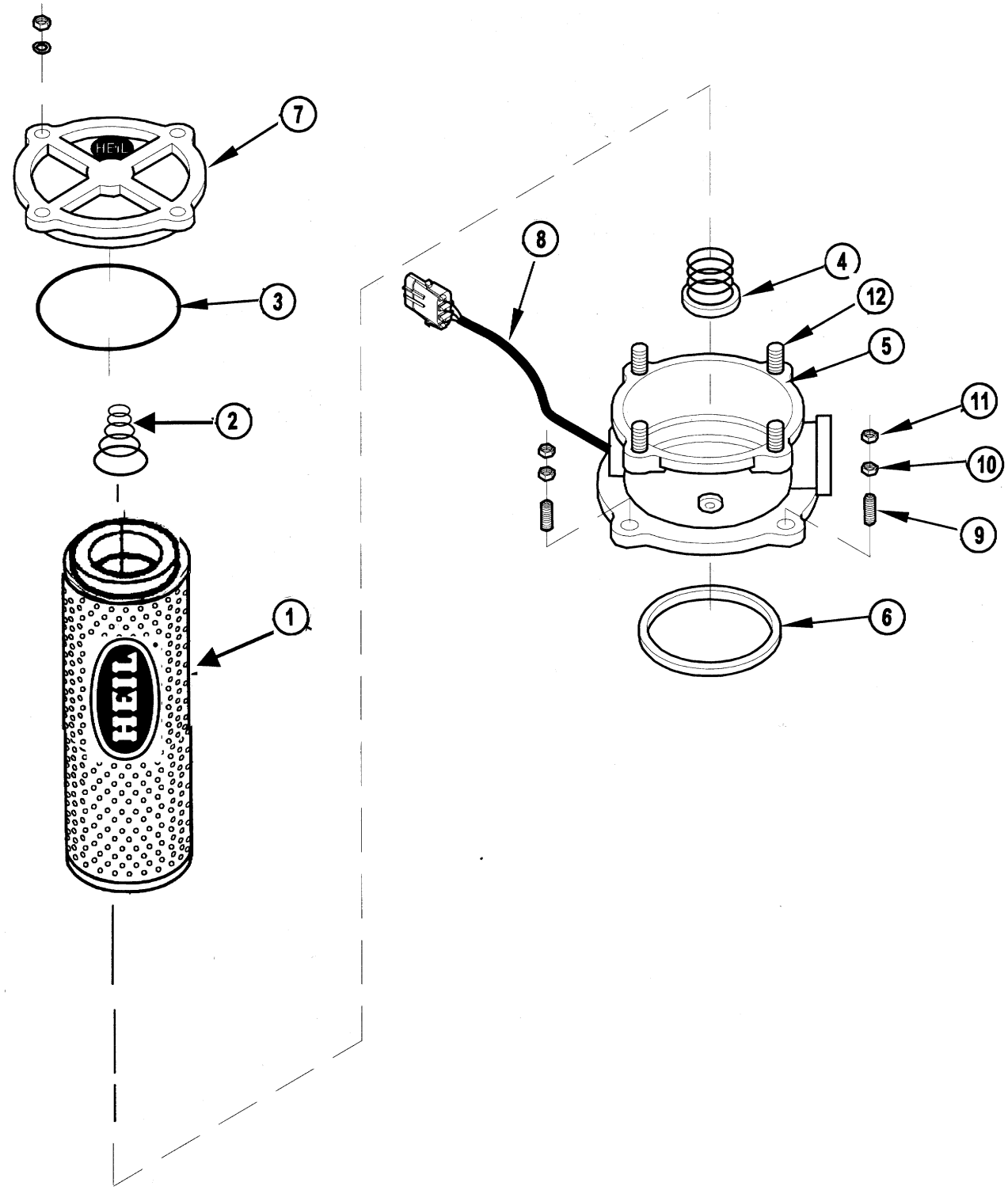
FILTER ASSEMBLY

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RETURN LINE FILTER

075-0912



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RETURN LINE FILTER

075-0912

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	075-0912	FILTER, Return Line	-	REF
1	075-0912-030	ELEMENT, Replacement Filter (3 Micron)	-	1
2	075-0912-004	SPRING (Part of Cover, Item 7)	-	1
3	075-0912-003	O-RING, Cover	-	1
4	NSS	ASSEMBLY, By-Pass (Part of Element)	-	1
5	075-0711-009	HEAD	-	1
6	075-0711-010	GASKET, Tank	-	1
7	075-0912-002	COVER (Includes Spring Item 2)	-	1
8	075-0711-012	INDICATOR, Electrical	-	1
9	047-2293-001	STUD, 3/8” Double End	-	4
10	FSP240900	NUT, Lock, 3/8”-24	-	4
11	FSP270900	NUT, Hex, 3/8”-24	-	4
12	075-0711-013	STUD	-	4

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SECTION 6
ELECTRICAL

Rapid Rail® Co-Collector
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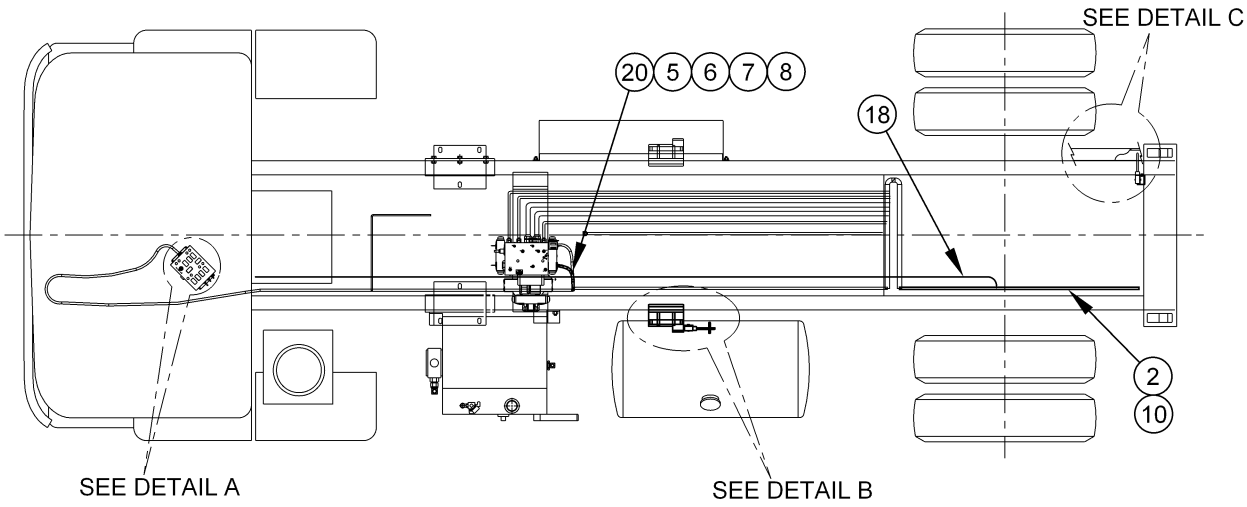
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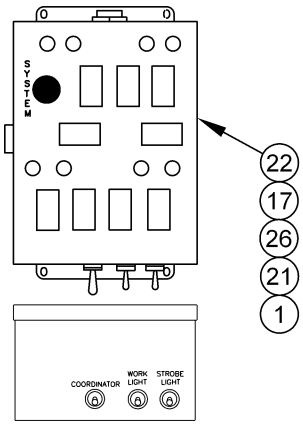
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BODY ELECTRICAL KITS

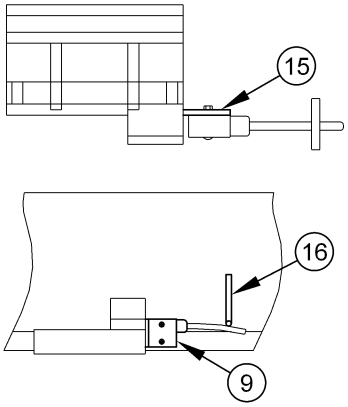
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ELECTRICAL MOUNT KIT
372-2933

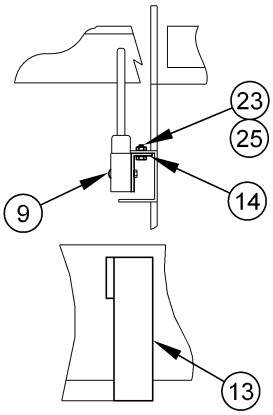




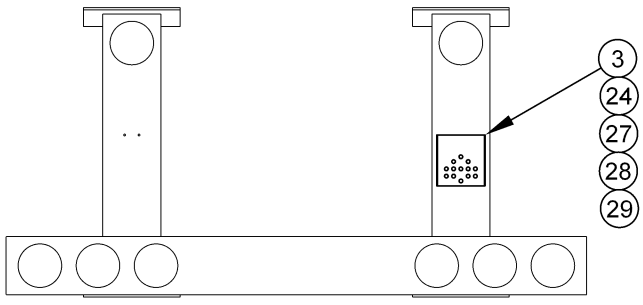
DETAIL A



DETAIL B



DETAIL C



VIEW OF REAR UNDERRIDE GUARD

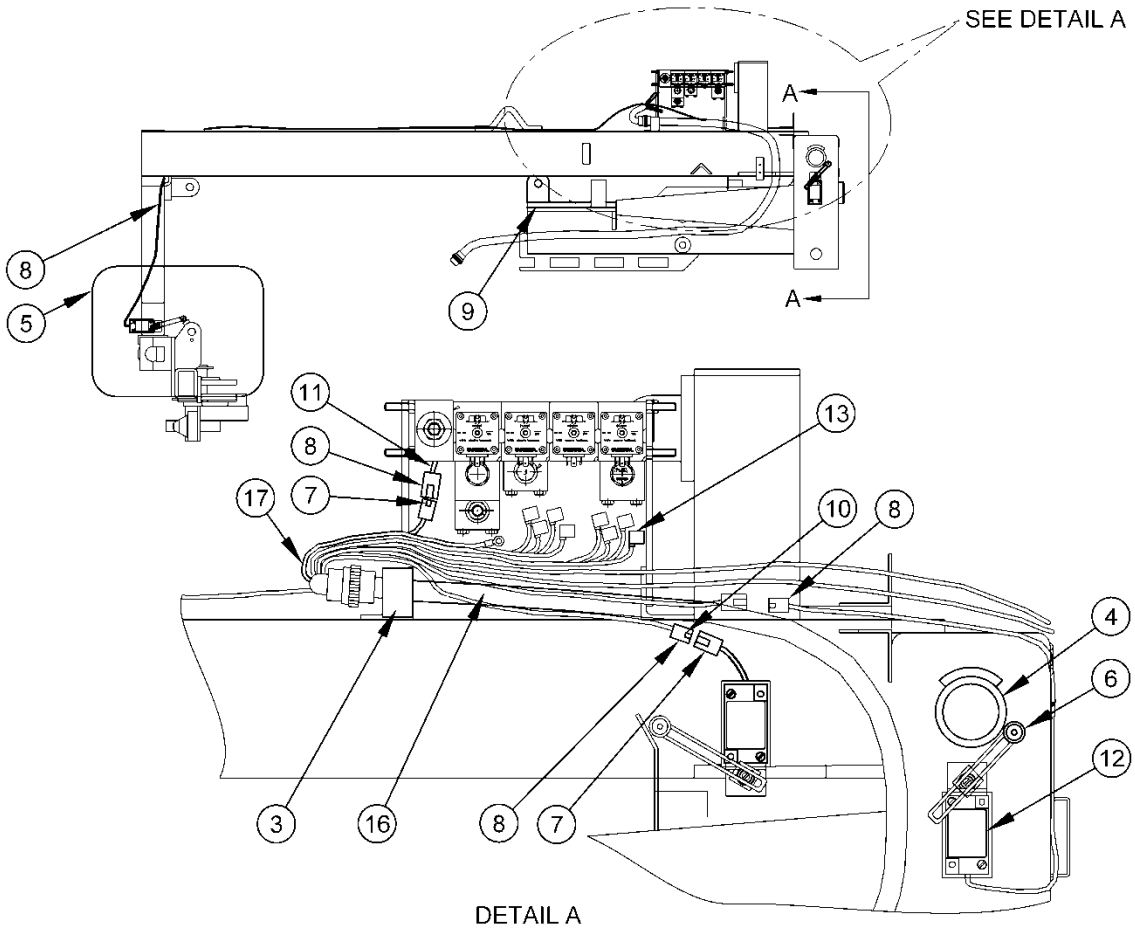
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ELECTRICAL MOUNT KIT
372-2933

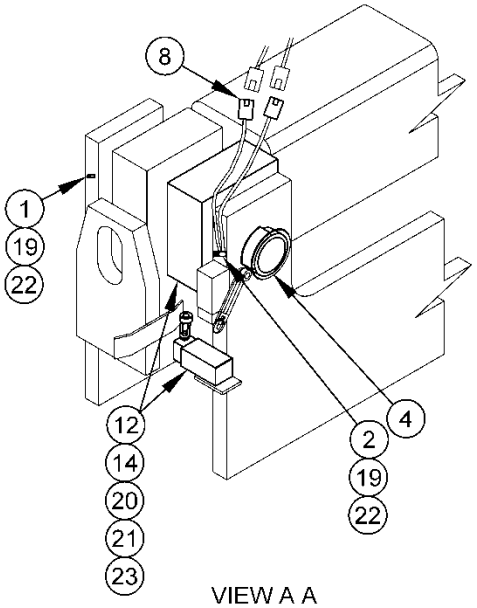
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-2933	KIT, Electrical, Mount	-	REF
1	036-1122-004	CLAMP, Tube, 1/4”	-	3
2	036-1640-208	TIE, Wire, 7-1/25”, #50	-	REF
3	108-3858	ALARM, Reverse	-	1
-4	108-4827-121	TERMINAL, Female, 16-14 AWG, Packard	-	2
5	108-4827-004	CONNECTOR, Female, 2-Way, Packard	-	1
6	108-4827-003	CONNECTOR, Male, 2-Way, Packard	-	1
7	108-4827-111	TERMINAL, Male, 16-14 AWG, Packard	-	2
8	108-4827-132	SEAL, Cable, 16-14 AWG	-	4
9	108-5031	SWITCH, Whisker	-	2
10	263-1060-320	HARNESS, Chassis, Mid Body, Turn, 320" (See SM 10)	-	1
-11	108-7931	FUSE, Blade, 40 Amp.	-	1
-12	108-7930	HOLDER, Fuse, Blade	-	1
13	211-6419	BRACKET, Limit Switch, Body-Up	-	1
14	211-6420	BRACKET, ADJ, Limit Switch, Body-Up	-	1
15	211-6436	BRACKET, Switch, Body-Up	-	1
16	211-6440	ROD, Actuating, Body Down	-	1
17	254-4585	BOX, Control	-	1
18	263-0075	HARNESS, Chassis, Light (See SM 10)	-	1
-19	NA	-	-	-
20	263-1040	HARNESS, Valve, Packer, w/Vicker (See SM 10)	-	1
21	263-1039-003	HARNESS, Cab to Body (See SM 10)	-	1
22	701-8431-002	SCHEMATIC, Control Box (See SM 10)	-	REF
23	FS070715	HHCS, 1/4”-20 x 3/4”, Gr. 5	-	1
24	FS220700	NUT, Lock, 1/4"	-	2
25	FS230700	NUT, Lock, 1/4”-20, Gr. 5	-	1
-26	FS504200	SCREW, Tek, #10, 1”	-	4
27	FS540700	WASHER, Lock, 1/4”	-	2
28	FS520700	WASHER, Flat, 1/4" SAE, Plain	-	4
29	FS420720	SCREW, Mach., 1/4-20 x 1”	-	2

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ELECTRICAL KIT
108-7598



DETAIL A



VIEW A A

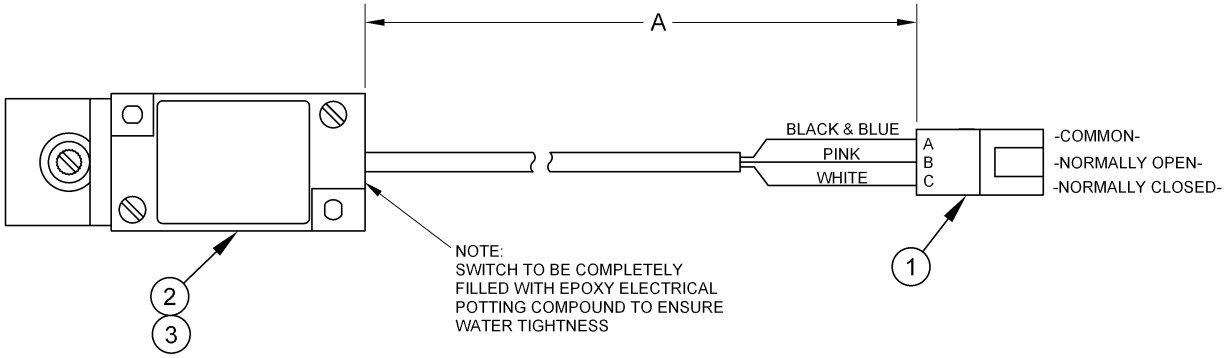
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ELECTRICAL KIT
108-7598

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	108-7598	KIT, Electrical	-	REF
1	036-1122-008	CLAMP, Tube, 1/2'' x 13/32”	-	1
2	036-1122-010	CLAMP, Cable, 5/8”	-	1
3	036-1641-014	CLAMP, Tube, Std., 7/8"	-	1
4	096-0576	SWITCH, Limit, Cam	-	2
5	096-0577	SWITCH, Arm, Cam, Dump	-	1
6	108-2096	SWITCH, Limit, Actuator Arm	-	4
7	108-6461-001	PLUG, Str., 3 Way, Deutsch DT Series	-	1
8	108-6461-002	RECEPTACLE, Str., 3 Way, Deutsch DT Series	-	REF
9	108-6461-011	PLUG, Str., 2 Way, Deutsch DT Series	-	REF
10	108-6823-002	PLUG, Jumper	-	1
11	108-6836-002	SWITCH, Pressure, w/Connector, Deutsch	-	REF
12	108-7381	SWITCH, Limit, Heavy Duty (See Pg. 6009)	-	4
13	108-7383	CONNECTOR, Dinn	-	REF
14	211-9910	BRACKET, Limit Switch, Mount	-	4
-15	NA	-	-	-
16	263-0675-002	HARNESS, Loader, Middle (See SM 10)	-	1
17	263-0675-005	HARNESS, Valve, End (See SM 10)	-	1
-18	272-9678	KIT, Adapter, Deutsch (See Pg. 6009)	-	REF
19	FS070715	HHCS, 1/4”-20 x 3/4”, Gr. 5	-	2
20	FS120432	SOCKET, Hd., #10-32 x 2-1/4”	-	8
21	FS240400	NUT, Lock, #10, Gr. 5	-	8
22	FS260700	NUT, 1/4”	-	2
23	FS520400	WASHER, Flat, #10”, SAE	-	8

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Rapid Rail® Co-Collector
HEAVY DUTY LIMIT SWITCH
108-7381



PART NUMBER	A
108-7381	18"

NO ILLUSTRATION

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HEAVY DUTY LIMIT SWITCH

108-7381

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	108-7381	SWITCH, Limit, Heavy Duty	-	REF
1	108-6461-002	RECEPTACLE, Str., 3 Way, Deutsch DT Series	-	1
2	108-6828	HOUSING, Actuator	-	1
3	108-6829	ASSEMBLY, Switch/Cable	-	1

DEUTSCH ADAPTER KIT

272-9678

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	272-9678	KIT, Adapter, Deutsch	-	REF
-1	108-6461-001	PLUG, Str., 3 Way, Deutsch DT Series	-	1
-2	108-6461-002	RECEPTACLE, Str., 3 Way, Deutsch DT Series	-	6
-3	108-6461-003	KIT, Plug, Str.. 4-Way, Deutsch	-	2
-4	108-6461-011	PLUG, Str., 2 Way, Deutsch DT Series	-	2

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SPLIT BODY ELECTRICAL KIT
372-4990-001

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SPLIT BODY ELECTRICAL KIT

372-4990-001

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-4990-001	KIT, Electrical, Split Body	-	REF
-1	036-1249	CLAMP/HOLDER, Harness	-	15
-2	036-1640-208	TIE, Wire, 7-1/25”, #50	-	20
-3	263-1412-001	HARNESS, Control (See SM 10)	-	1

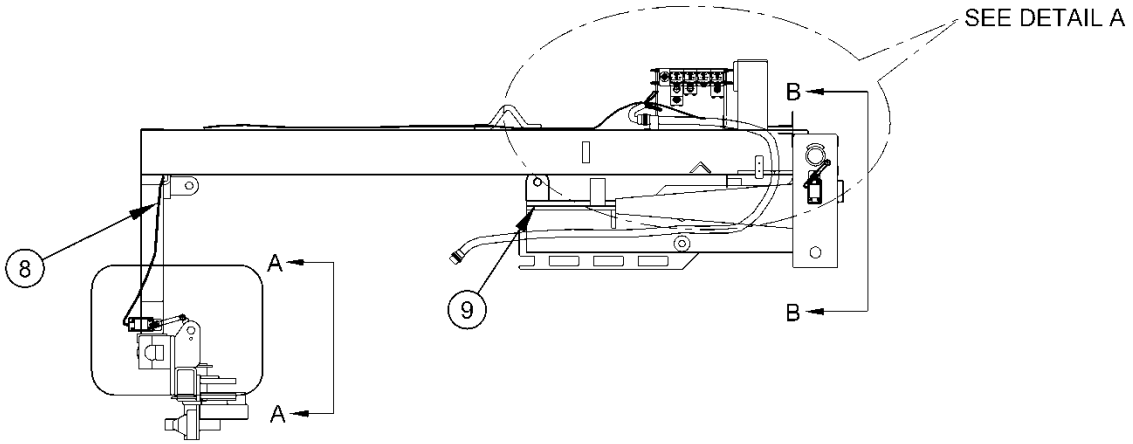
TAILGATE ELECTRICAL KIT

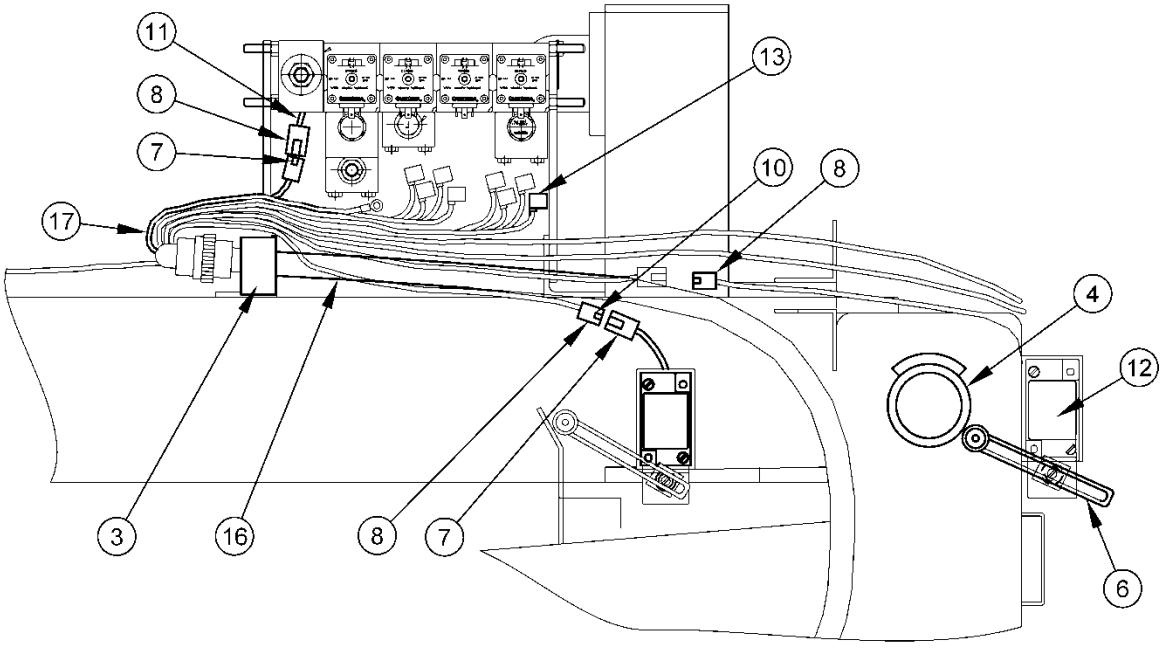
372-4990-002

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-4990-002	KIT, Electrical, Tailgate	-	REF
-1	036-1249	CLAMP/HOLDER, Harness	-	8
-2	036-1474-009	ASSEMBLY, Clamp, 1-1/4”, Hydrasorb	-	2
-2	036-1640-208	TIE, Wire, 7-1/25”, #50	-	15
-4	047-1640	NUT, Well, #10-32 x 3/8"	-	2
-5	063-0109	SWITCH, Proximity, Sourcing, 30 mm	-	2
-6	108-3858	ALARM, Back Up	-	1
-7	115-0608	LIGHT, License Plate (See SM 7)	-	1
-8	115-0742	LIGHT, STT, Red, 4” (See SM 7)	-	8
-9	115-0743	LIGHT, Back-Up, Clear, 4” (See SM 7)	-	2
-10	115-0760	LIGHT, Clearance, Red, 2-1/2” (See SM 7)	-	7
-11	115-0869	LIGHT, Stop, Oval, Red (See SM 7)	-	2
-12	115-0925	LIGHT, Marker, 2” (See SM 7)	-	2
-13	207-2938-015	CHANNEL, Unistrut, 4”	-	2
-14	263-0664-002	HARNESS, Splitter, Tailgate (See SM 10)	-	1
-15	263-1436-017	HARNESS, Tailgate, Curb Side (See SM 10)	-	1
-16	263-1436-018	HARNESS, Tailgate, Street Side (See SM 10)	-	1
-17	FSP400420	SCREW, Mach., #10-32 x 1, Rd. Hd, Plated.	-	2

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Rapid Rail® Co-Collector
ELECTRICAL KIT
372-2654





DETAIL A

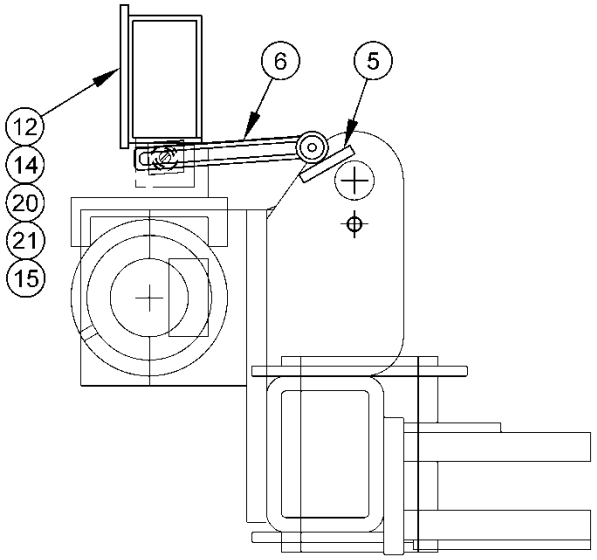
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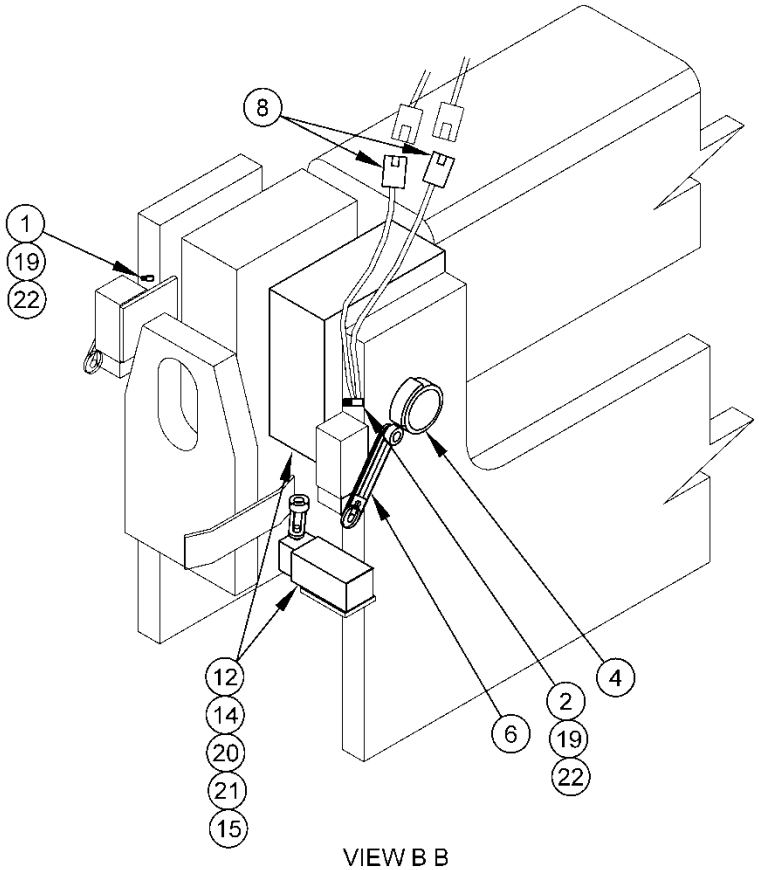
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Rapid Rail® Co-Collector
ELECTRICAL KIT
372-2654



VIEW A A



VIEW B B

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Rapid Rail® Co-Collector
ELECTRICAL KIT
372-2654

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-2654	KIT, Electrical	-	REF
1	036-1122-008	CLAMP, Tube, 1/2'' x 13/32”	-	1
2	036-1122-010	CLAMP, Cable, 5/8”	-	1
3	036-1641-014	CLAMP, Tube, Std., 7/8"	-	1
4	096-0576	SWITCH, Limit, Cam	-	2
5	015-3030	SWITCH, Arm, Cam, Dump	-	1
6	108-2096	SWITCH, Limit, Actuater Arm	-	4
7	108-6461-001	PLUG, Str., 3 Way, Deutsch DT Series	-	1
8	108-6461-002	RECEPTACLE, Str., 3 Way, Deutsch DT Series	-	REF
9	108-6461-011	PLUG, Str., 2 Way, Deutsch DT Series	-	REF
10	108-6823-002	PLUG, Jumper	-	1
11	063-0116	SWITCH, Pressure, w/Connector, Deutsch	-	REF
12	108-7381	SWITCH, Limit, Heavy Duty (See Pg. 6009)	-	4
13	108-7383	CONNECTOR	-	REF
14	211-9910	BRACKET, Limit Switch, w/Mount	-	4
15	FS520400	WASHER, Flat, #10”, SAE	-	8
16	263-0675-002	HARNESS, Loader, Middle (See SM 10)	-	1
17	263-1213	HARNESS, Valve, End (See SM 10)	-	1
-18	272-9678	KIT, Adaptor, Deutsch	-	REF
19	FS070715	HHCS, 1/4”-20 x 3/4”, Gr. 5	-	2
20	FS120432	SOCKET, Hd., #10-32 x 2-1/4”	-	8
21	FS230400	NUT, Lock, #10, Gr. 5	-	8
22	FS230700	NUT, Lock, 1/4”-20, Gr. 5	-	2

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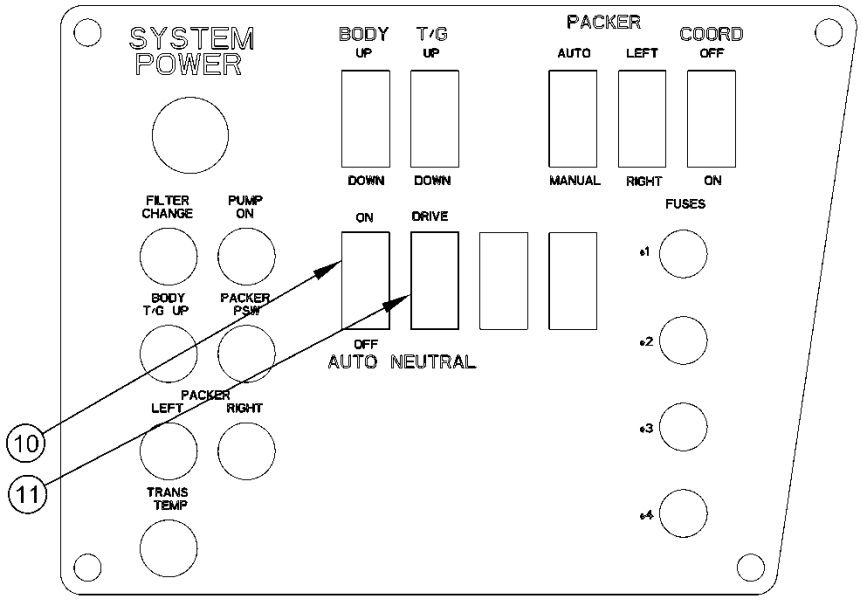
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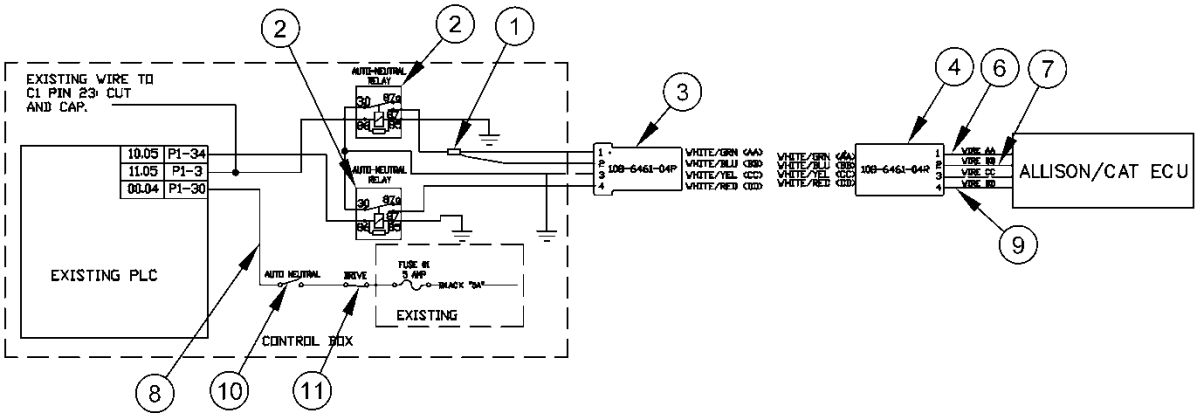
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NEUTRAL KITS

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Rapid Rail® Co-Collector
AUTO NEUTRAL BASE KIT
372-4915





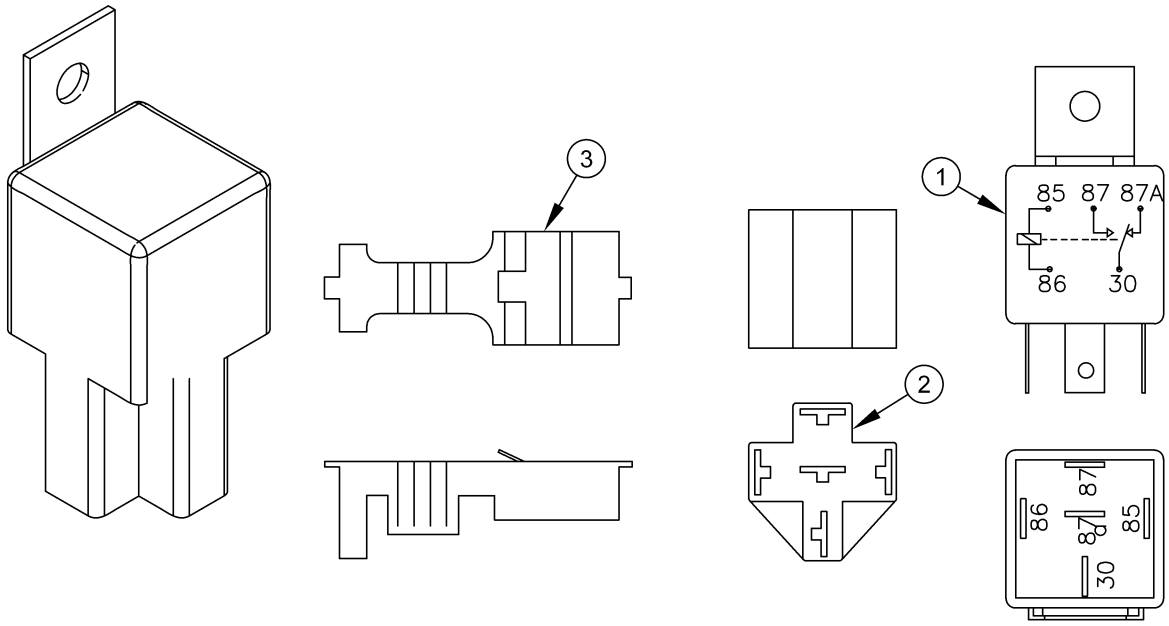
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AUTO NEUTRAL BASE KIT
372-4915

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-4915	KIT, Auto Neutral, Base	-	REF
1	108-1110-002	CONNECTOR, Butt, 14-16 Ga.	-	5
2	108-4643	RELAY, Throttle (See Pg. 6021)	-	2
3	108-6461-04P	PLUG, 4 Way, Deutsch DT Series	-	1
4	108-6461-04R	RECEPTACLE, 4 Way, Deutsch DT Series	-	1
-5	NA	-	-	-
6	108-5233-004	WIRE, White/Green, 16 Ga.	-	15’
7	108-5233-008	WIRE, White/Blue, 16 Ga.	-	15’
8	108-5233-015	WIRE, Dark Blue, 16 Ga.	-	2’
9	108-5233-016	WIRE, White/Red, 16 Ga.	-	15’
10	108-7760	SWITCH, Rocker, Allied	-	1
11	108-7760-005	SWITCH, Rocker, SPST, NC	-	1

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THROTTLE RELAY
108-4643



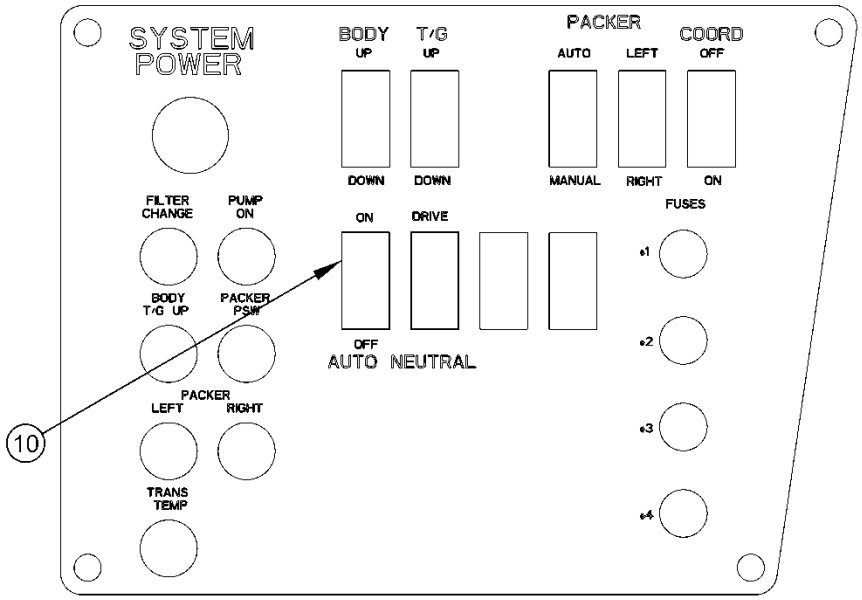
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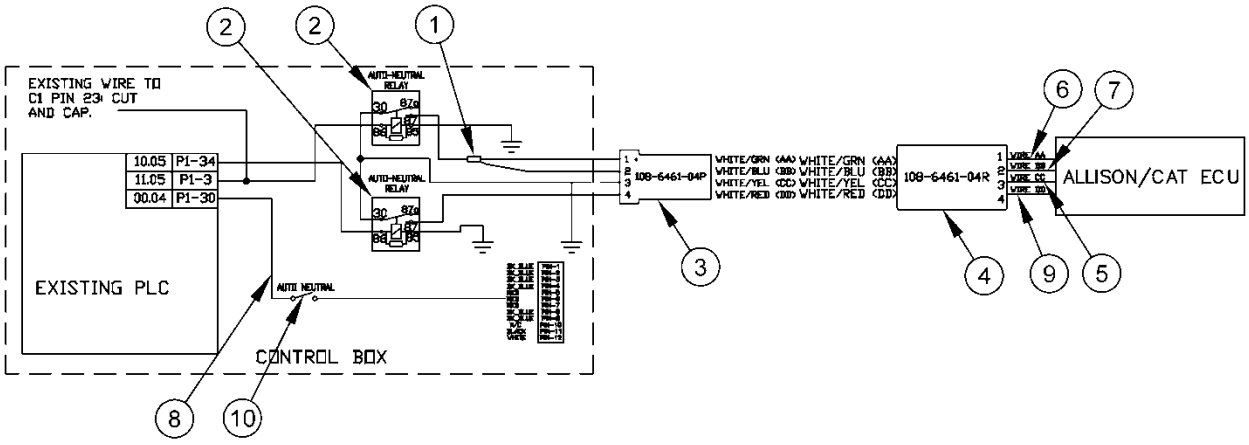
Rapid Rail® Co-Collector
THROTTLE RELAY
108-4643

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	108-4643	RELAY, Throttle	-	REF
1	108-4643-001	RELAY	-	1
2	108-4643-002	CONNECTOR	-	1
3	108-4643-003	TERMINAL	-	5

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Rapid Rail® Co-Collector
AUTOCAR WX AUTO NEUTRAL JOYSTICK KIT
372-4915-002





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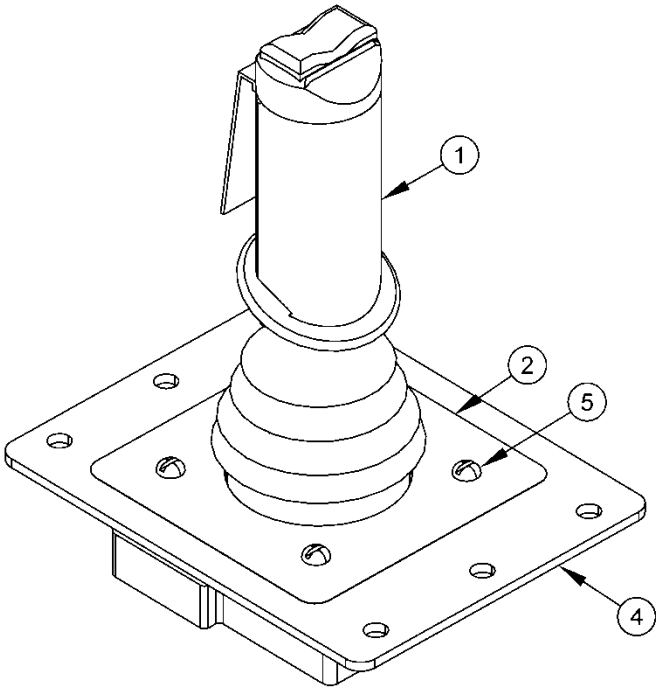
AUTOCAR WX AUTO NEUTRAL JOYSTICK KIT

372-4915-002

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-4915-002	KIT, Joystick, Auto Neutral, Autocar WX	-	REF
1	108-1110-002	CONNECTOR, Butt, 14-16 Ga.	-	5
2	108-4643	RELAY, Throttle	-	2
3	108-6461-04P	PLUG, 4 Way, Deutsch DT Series	-	1
4	108-6461-04R	RECEPTACLE, 4 Way, Deutsch DT Series	-	1
5	108-5233-003	WIRE, White/Yellow, 16 Ga.	-	15’
6	108-5233-004	WIRE, White/Green, 16 Ga.	-	15’
7	108-5233-008	WIRE, White/Blue, 16 Ga.	-	15’
8	108-5233-015	WIRE, Dark Blue, 16 Ga.	-	2’
9	108-5233-016	WIRE, White/Red, 16 Ga.	-	15’
10	108-7760	SWITCH, Rocker, Allied	-	1
-11	-	NA	-	REF
-12	254-4721-006	ASSEMBLY, Joystick, Deadman, Autocar (See Pg. 6025)	-	1

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Rapid Rail® Co-Collector
AUTOCAR DEADMAN JOYSTICK ASSEMBLY
254-4721-006



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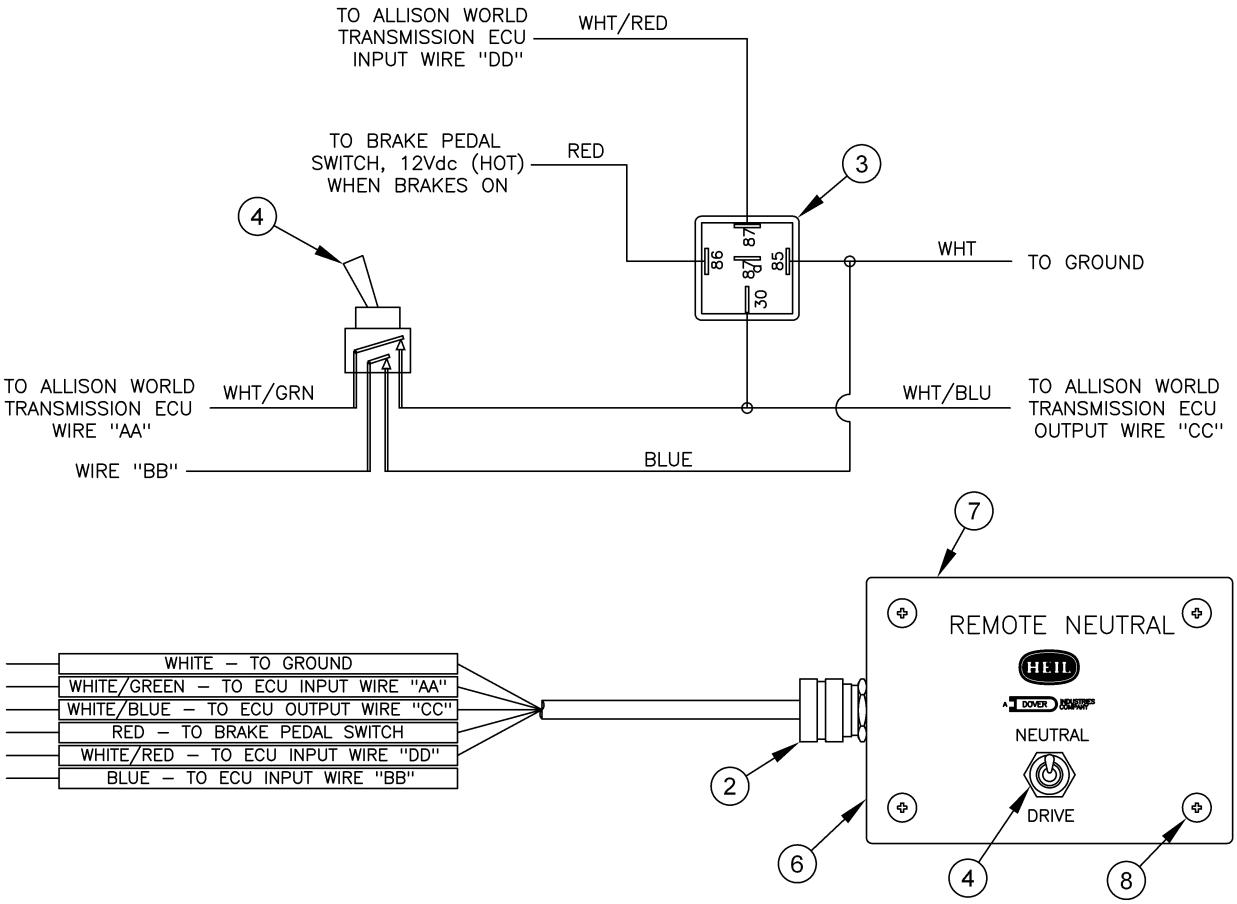
AUTOCAR DEADMAN JOYSTICK ASSEMBLY

254-4721-006

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	254-4721-006	ASSEMBLY, Joystick, Deadman, Autocar	-	REF
1	108-8355	JOYSTICK, Deadman	-	1
2	212-3028-006	DECAL, Joystick	-	1
-3	263-1436-014	HARNESS, Control Button 4 (See SM 10)	-	1
4	311-3504-007	BRACKET, Joystick, Autocar	-	1
5	FSP420711	SCREW, Mach., 1/4”-20 x 1/2”, Rd. Hd.	-	4

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Rapid Rail® Co-Collector
REMOTE NEUTRAL KIT
272-8865



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Rapid Rail® Co-Collector
REMOTE NEUTRAL KIT
272-8865

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	272-8865	KIT, Remote Neutral (See SM 10)	-	REF
-1	272-8865-KIT	ASSEMBLY, Kit, Remote Neutral	-	1
2	108-1759-003	GRIP, Cord, Water-Tight	-	REF
3	108-4643-001	RELAY, Throttle	-	REF
4	108-6816	SWITCH, Toggle	-	REF
-5	NA	-	-	-
6	151-4497	BOX, Remote Neutral	-	REF
7	274-0305-001	VELCRO (Both PCS)	-	REF
8	FSP490109	SCREW, Tapping, 1/16” x 3/8”, Plated	-	REF
-9	108-2050	TERMINAL, Female w/Heat Shrink, Quick Disconnect	-	REF
-10	108-1110-002	CONNECTOR, Butt, 14-16 Ga.	-	5

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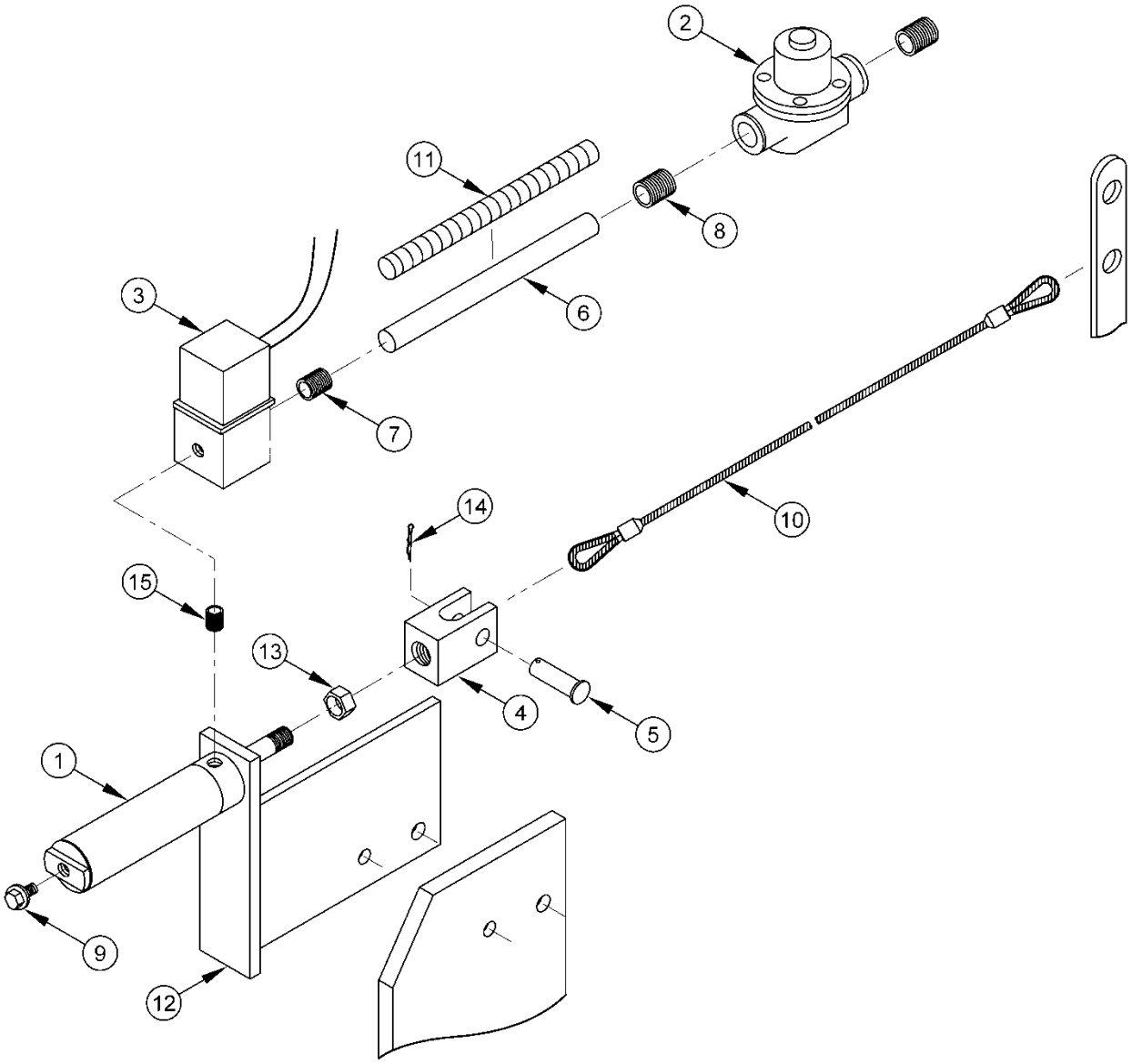
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THROTTLE LIMIT KITS

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Rapid Rail® Co-Collector
THROTTLE STOP KIT
272-6829



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Rapid Rail® Co-Collector
THROTTLE STOP KIT
272-6829

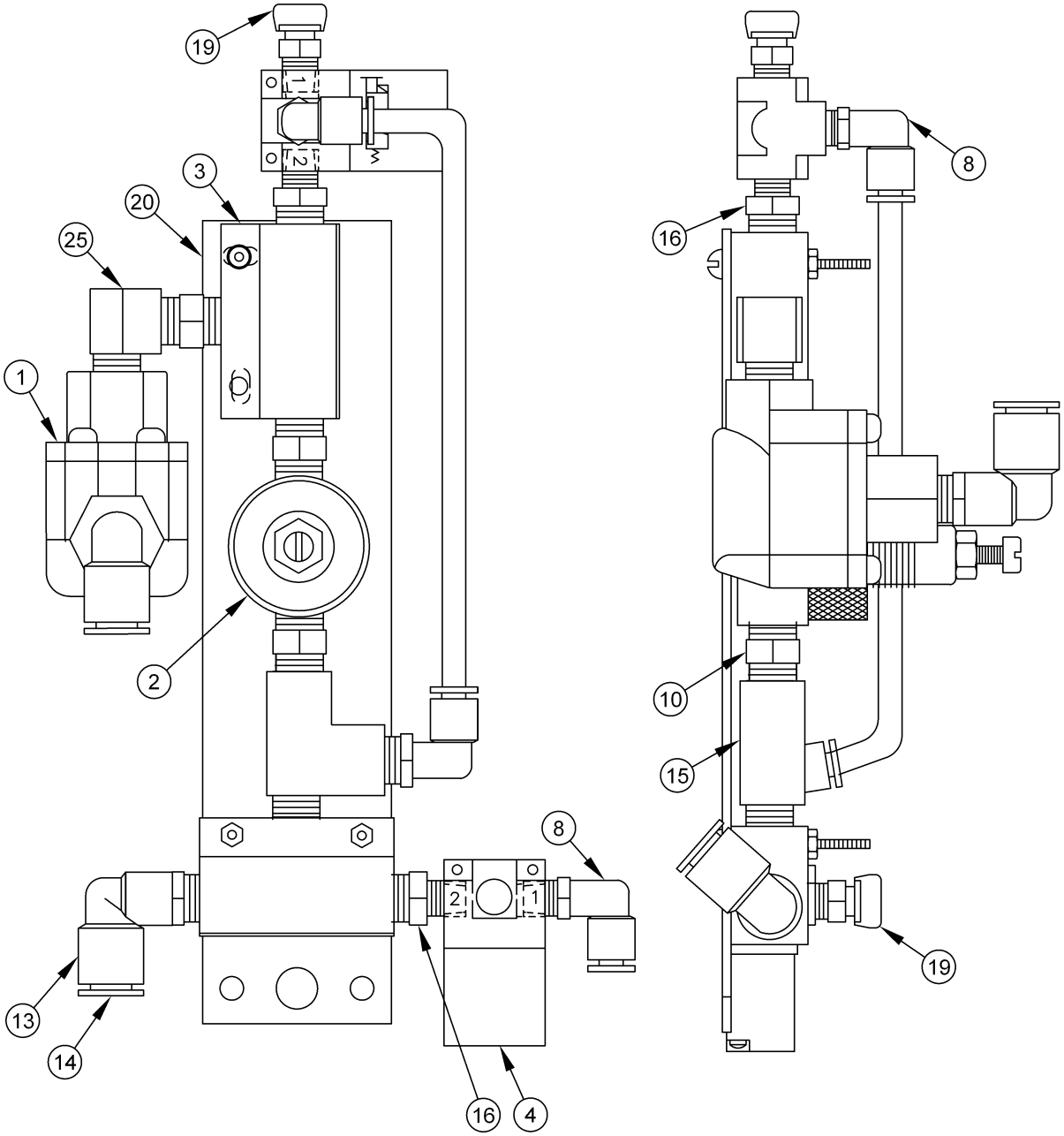
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	272-6829	KIT, Throttle Stop	-	REF
1	001-6398	CYLINDER, Throttle Stop	-	1
2	031-1909	VALVE, Protection, Pressure	-	1
3	031-5724-012	SOLENOID, Air	-	1
4	032-1546	YOKE	-	1
5	048-3127-003	PIN, Clevis, 5/16”	-	1
6	054-5859	AIR LINE, 1/4”	-	1
7	054-8468-003	CONNECTOR, Air Line, Str.	-	1
8	054-8468-004	FITTING, Airline, 1/4”-1/4” NPT	-	1
9	060-0408	VENT, Breather, 7/16” Hex., 1/8” NPT	-	1
10	097-0376	CABLE, Throttle	-	1
11	108-5034-001	LOOM, Electrical, Split Convoluted, Plastic, 1/4”	-	1
12	211-8367	BRACKET, Mtg.	-	1
13	FS300100	NUT, Jam, 7/16”-20	-	1
14	FS340215	PIN, Cotter, 3/32” x 3/4”	-	1
15	FS880400	NIPPLE, Close, 1/8” NPT	-	1

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THROTTLE LIMITER/ADVANCE CHASSIS WITH PNEUMATIC ACCELERATOR

272-7567-102



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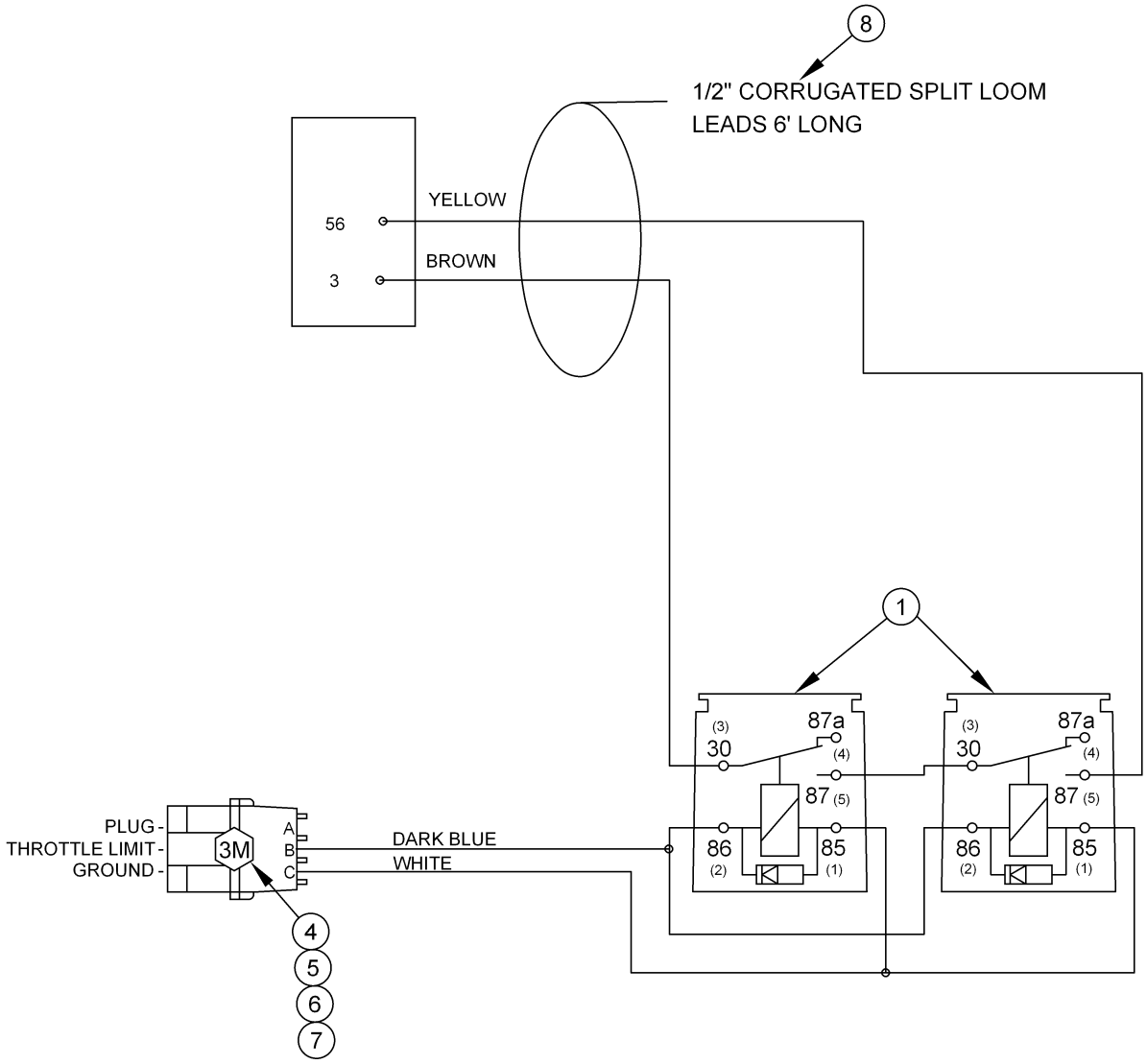
THROTTLE LIMITER/ADVANCE CHASSIS WITH PNEUMATIC ACCELERATOR

272-7567-102

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	272-7567-102	ACCELERATOR, Pneumatic, Chassis, Throttle Limiter/Advance	-	REF
1	031-3314	VALVE, Exhaust, Quick	-	1
2	031-3318	REGULATOR, Pressure	-	1
3	031-3540	VALVE, Shuttle, 1/4”	-	1
4	031-5724-012	SOLENOID, Air	-	1
-5	036-1115	CLAMP, Strap, Plastic	-	10
-6	047-2151-011	SCREW, Tek, 1/4”	-	2
-7	054-5449	TUBE, Air Line, 1/4"	-	20’
8	054-8470-003	ELBOW, Air Line Connection, 1/8” NPT-1/4”	-	1
-9	054-7648	AIR LINE, 3/8”	-	10’
10	054-8927-002	NIPPLE, Pipe, Brass, 1/4”	-	2
-11	054-8469-002	UNION, Tube, 1/4"	-	2
-12	054-8469-003	FITTING, Air, 90°, 3/8”	-	2
13	054-8470-004	ELBOW, Connection, Air Line	-	3
14	054-8470-006	ELBOW, Pipe 1/4”-Tube 3/8”	-	2
15	054-8740-002	TEE, Street, 1/4”	-	1
16	054-8927-003	NIPPLE, Pipe, Brass, 1/4”-1/8”	-	1
-17	108-4476	LOOM, Electrical, Plastic, 1/2” ID	-	10’
-18	108-4498	LOOM, Electrical, Convoluted, 11/32”	-	20’
19	108-5354-006	BREATHER	-	1
20	211-9403	BRACKET, Throttle Advance/Limit	-	1
-21	FS280300	NUT, Hex, # 8-32, Plain	-	2
-22	FS420322	SCREW, Mach., #8-32 x 1-1/2”	-	2
-23	FS510300	WASHER, Flat, #8	-	2
-24	FS550300	WASHER, Lock, 7/64”, Plated	-	2
25	054-8739	ELBOW, Street 1/4”, Brass	-	1

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Rapid Rail® Co-Collector
DUMMY ELECTRONIC THROTTLE LIMIT KIT
272-8000-013



WIRE COLOR	FUNCTION
DARK BLUE	THROTTLE LIMIT
WHITE	GROUND
YELLOW	INPUT #1 PTO (ON/OFF)
BROWN	SENSOR COMMON

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DUMMY ELECTRONIC THROTTLE LIMIT KIT

272-8000-013

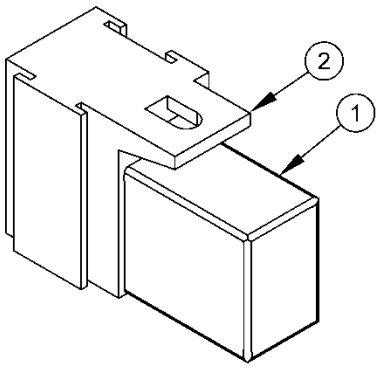
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	272-8000-013	KIT, Electronic, Throttle Limit, Dummy (See SM 10)	-	REF
1	069-0032	KIT, Micro Relay (See Pg. 6037)	-	2
-2	036-1581	STRAP, Tie, Harness, 5-1/2”, #50 Limit, Nylon	-	10
-3	047-2151-001	SCREW, Tek, #12-14 x 3/4”	-	2
4	108-4827-005	CONNECTOR, Male, 3 Way, Packard	-	1
5	108-4827-111	TERMINAL, Male, 16-14 AWG, Packard	-	2
6	108-4827-131	SEAL, Cable, 18 AWG	-	2
7	108-4827-133	SEAL, Cable, 12 AWG	-	1
8	108-5034-003	LOOM, Electrical, Split Convoluted, Plastic, 1/2”	-	8'
-9	108-5233-015	WIRE, Dark Blue, 16 Ga.	-	1'
-10	108-5233-021	WIRE, Brown, 16 Ga.	-	8'
-11	108-5233-022	WIRE, White, 16 Ga.	-	2'
-12	108-5233-024	WIRE, Yellow, 16 Ga.	-	8'
-13	212-2777-014	DECAL, Throttle Limit	-	2

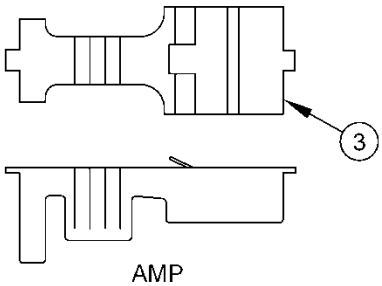
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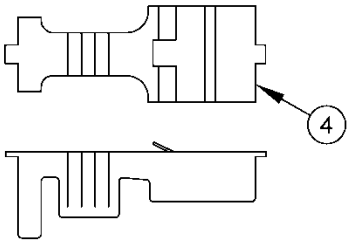
MICRO RELAY KIT

069-0032





AMP
12-16 AWG 1/4" TERMINAL



GROTE & HARTMANN
18 AWG 1/4" TERMINAL

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MICRO RELAY KIT

069-0032

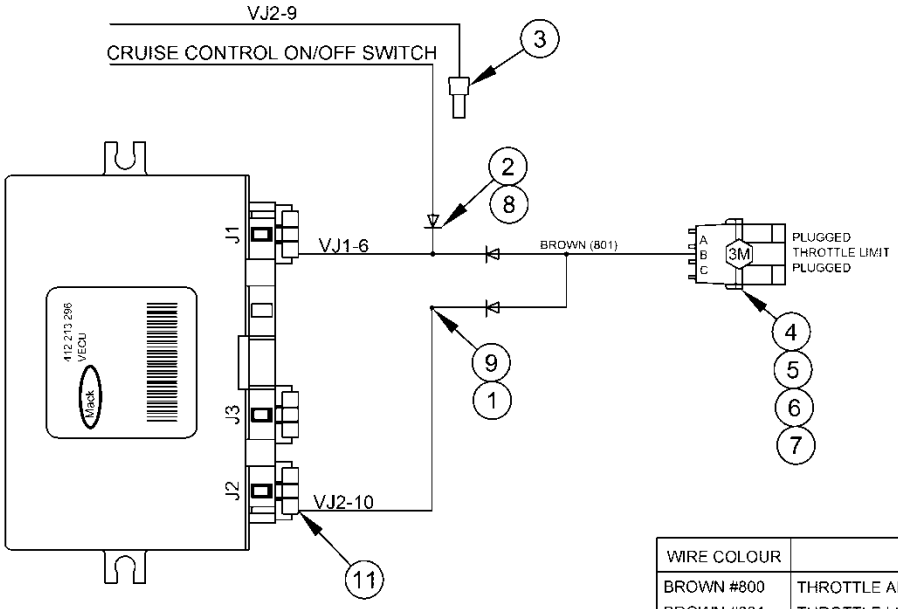
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	069-0032	KIT, Micro Relay	-	REF
1	069-0032-001	RELAY, Micro, 12 V DC	-	1
2	069-0032-002	CONNECTOR, Micro Relay	-	1
3	069-0032-003	TERMINAL, Micro Relay, 1/4"	-	2
4	069-0032-004	TERMINAL, Micro Relay, 3/16”	-	3

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VMAC ELECTRONIC THROTTLE LIMIT KIT

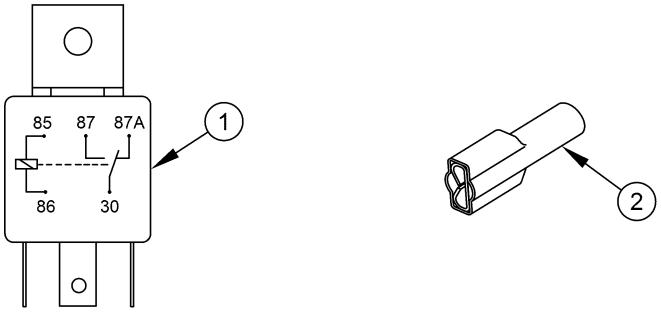
272-8000-016

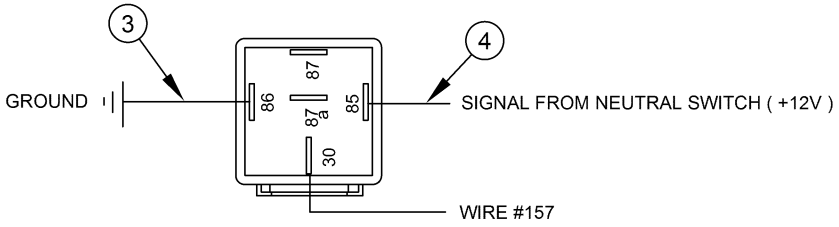


WIRE COLOUR	FUNCTION
BROWN #800	THROTTLE ADVANCE SIGNAL +12v
BROWN #801	THROTTLE LIMIT SIGNAL +12v
WHITE	GROUND

NAVISTAR THROTTLE LIMIT KIT

272-8000-017





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VMAC ELECTRONIC THROTTLE LIMIT KIT

272-8000-016

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	272-8000-016	KIT, Electronic, Throttle Limit, VMAC	-	REF
1	054-7350	TUBING, Shrink, 5/16”	-	14”
2	108-2648	DIODE, Silicon Rectifier	-	3
3	108-3647	CONNECTOR, Closed End, 14-16 Ga.	-	1
4	108-4827-005	CONNECTOR, Male, 3 Way, Packard	-	1
5	108-4827-111	TERMINAL, Male, 16-14 AWG, Packard	-	1
6	108-4827-131	SEAL, Cable, 18 AWG	-	1
7	108-4827-133	SEAL, Cable, 12 AWG	-	2
8	108-5717-002	CONNECTOR, Butt, Non Insulated, 16-14 Ga.	-	6
9	108-5717-003	CONNECTOR, Butt, Non Insulated, 12-10 Ga.	-	6
-10	108-6718-801	WIRE, Brown, 18 Ga.	-	3’
11	108-7114-003	PIN, Misc., VECU, Mack	-	1

NAVISTAR THROTTLE LIMIT KIT

272-8000-017

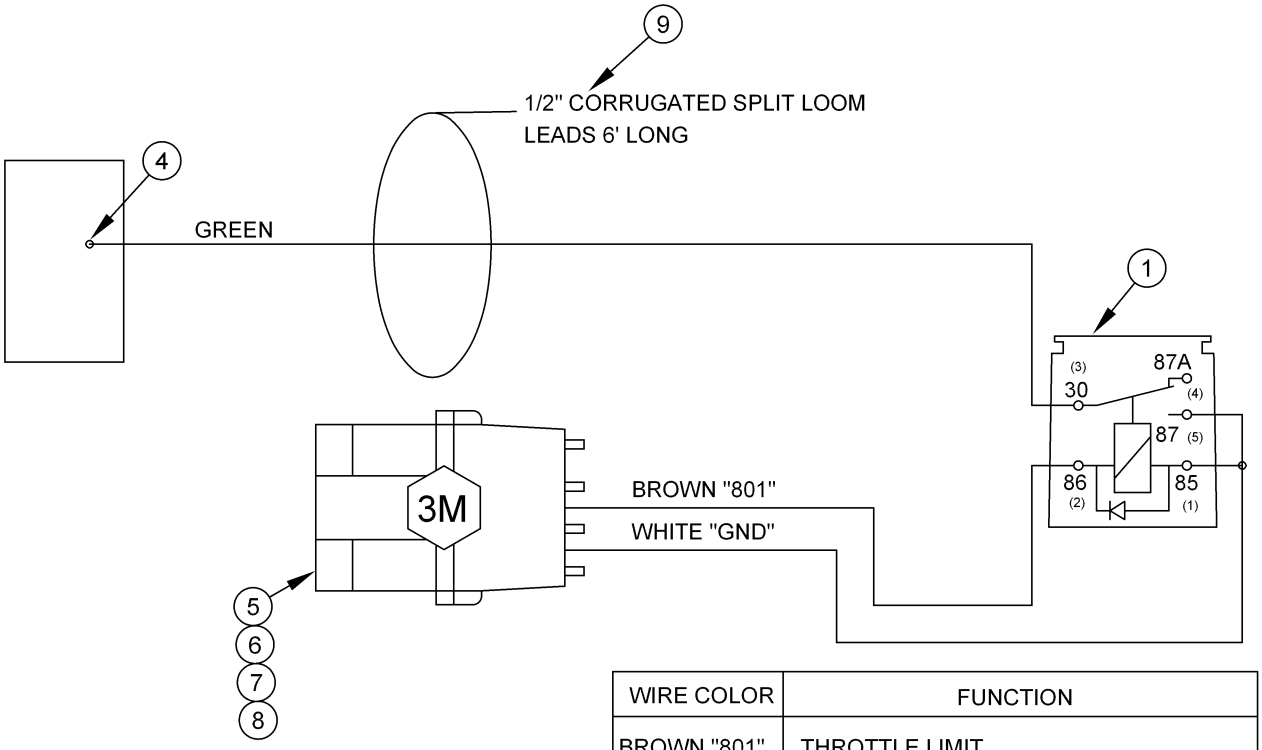
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	272-8000-017	KIT, Throttle Limit, Navistar	-	REF
1	108-4643-001	RELAY	-	1
2	108-2050	DISCONNECT, Quick, Terminal, w/Heat Shrink, Female	-	4
3	108-5233-017	WIRE, Black, 16 Ga.	-	12”
4	108-5233-009	WIRE, Red, 16 Ga.	-	12”

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CUMMINS ELECTRONIC THROTTLE LIMIT KIT

272-8000-020, 272-8000-021



WIRE COLOR	FUNCTION
BROWN "801"	THROTTLE LIMIT
WHITE "GND"	GROUND
GREEN	CUMMINS MAX. ENGINE SPEED SWITCH

NO ILLUSTRATION

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CUMMINS ELECTRONIC THROTTLE LIMIT KIT

272-8000-020, 272-8000-021

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	272-8000-020	KIT, Electronic, Throttle Limit, ISM/ISN/ISX, Cummins (See SM 10)	A	REF
-	272-8000-021	KIT, Electronic, Throttle Limit, ISB/ISC/ISL, Cummins (See SM 10)	B	REF
1	069-0032	KIT, Micro Relay (See Pg. 6037)	-	1
-2	036-1581	STRAP, Tie, Harness, 5-1/2", #50 Limit, Nylon	-	10
-3	047-2151-001	SCREW, Tek, #12-14 x 3/4"	-	2
4	108-4815-113	SOCKET, Deutsch	-	2
5	108-4827-005	CONNECTOR, Male, 3 Way, Packard	-	1
6	108-4827-111	TERMINAL, Male, 16-14 AWG, Packard	-	2
7	108-4827-131	SEAL, Cable, 18 AWG	-	2
8	108-4827-133	SEAL, Cable, 12 AWG	-	1
9	108-5034-003	LOOM, Electrical, Split Convoluted, Plastic, 1/2"	-	8'
-10	108-5233-025	WIRE, Green, 16 Ga.	-	8'
-11	108-6716-801	WIRE, Brown, 16 Ga.	-	1'
-12	108-6716-GND	WIRE, White, 16 Ga.	-	2'
-13	212-2777-014	DECAL, Throttle Limit	-	1

ELECTRONIC THROTTLE LIMIT KIT

272-8000-030, 272-8000-031

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	272-8000-030	KIT, Electronic, Throttle Limit, Cummins M-11	A	REF
-	272-8000-031	KIT, Electronic, Throttle Limit, Volvo	B	REF

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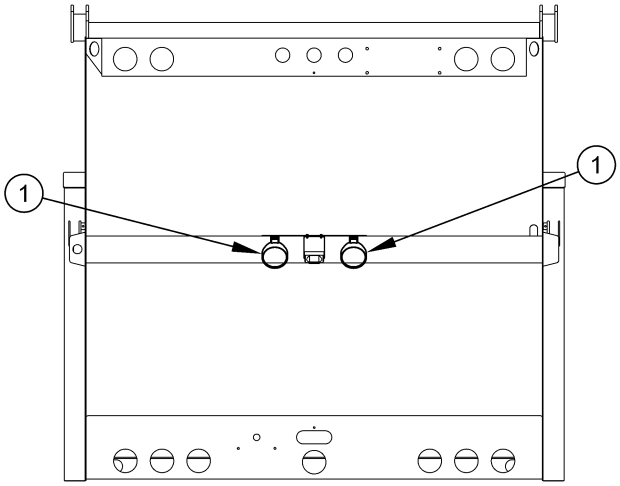
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TAILGATE WORK LIGHT KIT

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Rapid Rail® Co-Collector
TAILGATE WORK LIGHT KIT
372-3385



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TAILGATE WORK LIGHT KIT
372-3385

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-3385	KIT, Work Light, Tailgate	-	REF
1	115-1226	LIGHT, Flood (See SM 7)	-	2
-2	263-0891-004	HARNESS, Tailgate, Middle Cluster (See SM 10)	-	1

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SECTION 7
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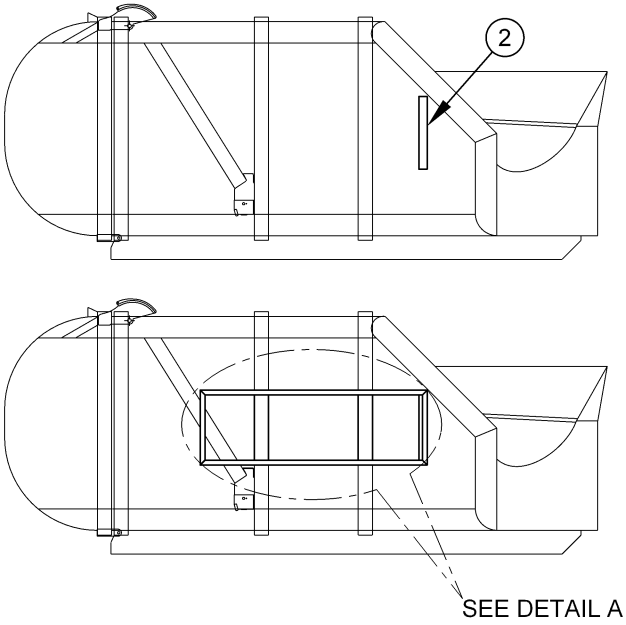
SIGN FRAME KITS

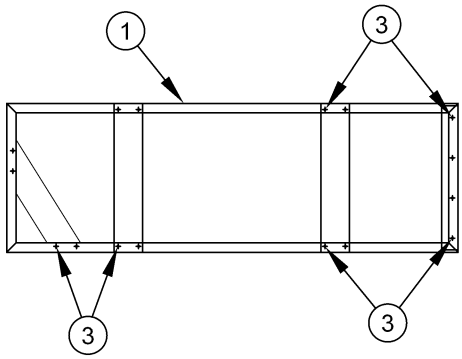
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30 AND 32 YARD ROADWAY SIGN FRAME KIT

372-0980-002

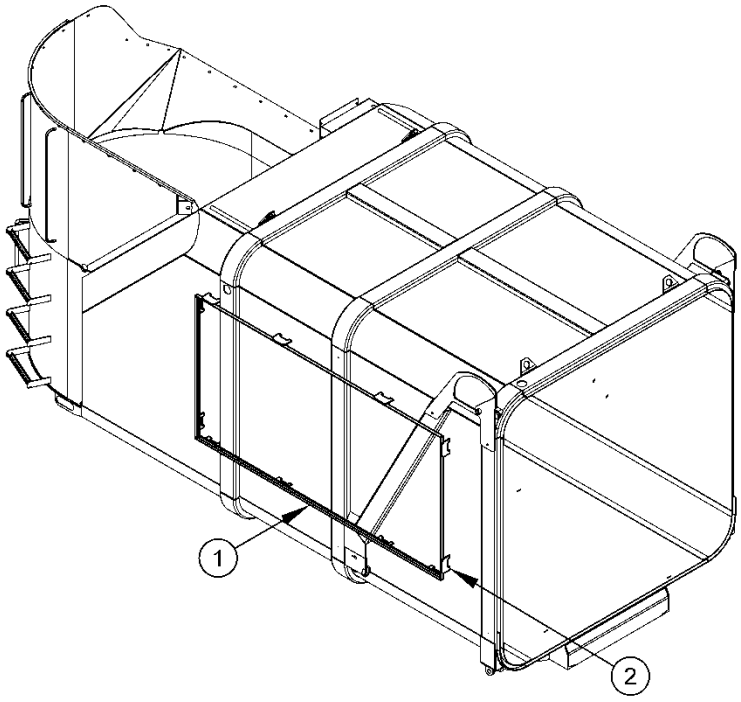




DETAIL A

48" X 96" SIGN FRAME KIT

372-4120-001



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30 AND 32 YARD ROADWAY SIGN FRAME KIT

372-0980-002

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-0980-002	KIT, Sign Frame, Roadway, 30 and 32 Yd.	-	REF
1	237-8767	FRAME, Sign, 2-1/4” x 95-1/2” x 31-1/2” OD	-	2
2	311-0184	BRACKET, Sign Frame, 12 Ga., HRS	-	2
3	FS370608	RIVETS, 3/16” x 5/16”	-	32

48" X 96" SIGN FRAME KIT

372-4120-001

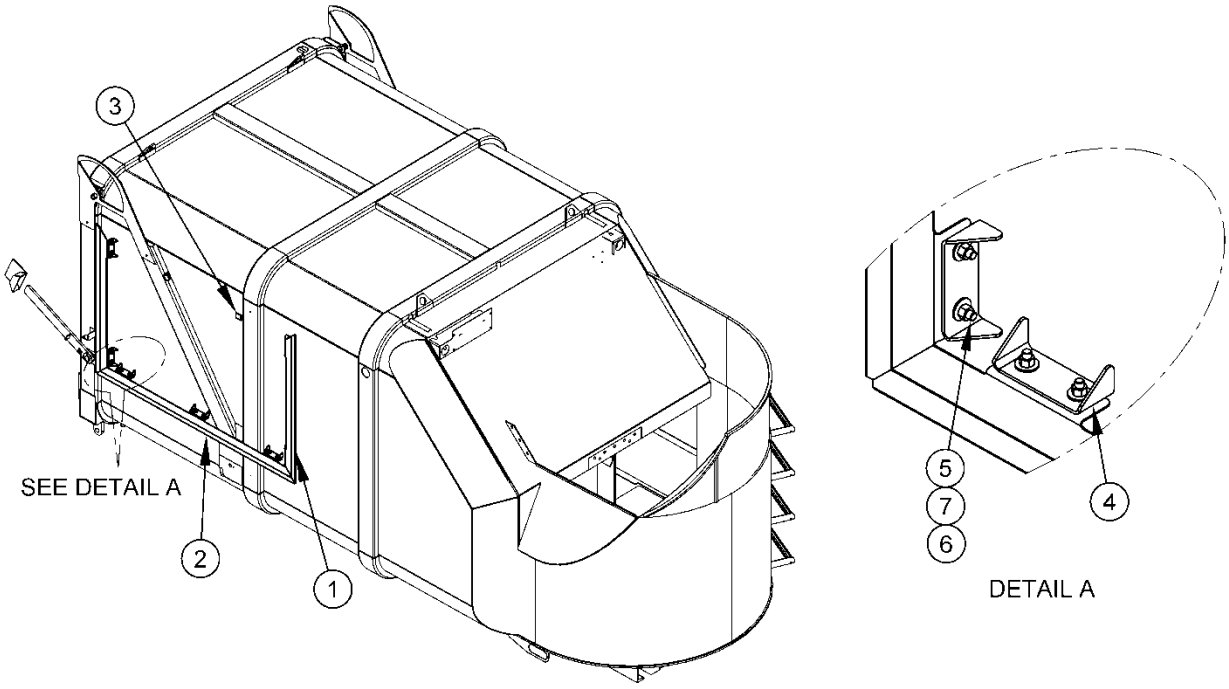
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-4120-001	KIT, Sign Frame, 48" x 96"	-	REF
1	237-7394	FRAME, Sign, Side, 1” x 1” x 3/16” (Item Welded)	-	2
2	272-7981-002	BRACE, Sign Frame, Middle, 7 Ga., HRS	-	22

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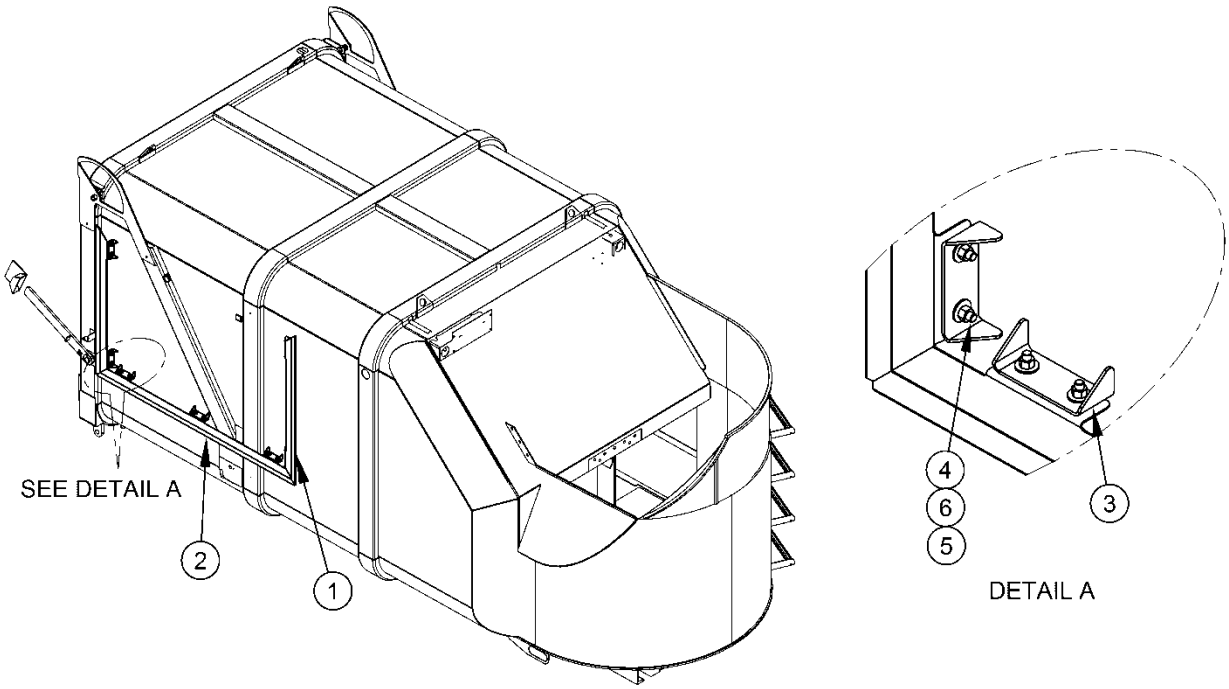
33" X 115", 48" X 73" AND 48" X 96" J-CHANNEL SIGN FRAME KIT

372-3104, 372-3105, 372-4338



36" X 72" AND 36" X 48" J-CHANNEL SIGN FRAME KIT

372-3107, 372-4339



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33" X 115", 48" X 73" AND 48" X 96" J-CHANNEL SIGN FRAME KIT

372-3104, 372-3105, 372-4338

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-3104	KIT, Sign Frame, J-Channel, 33" x 115"	A	REF
-	372-3105	KIT, Sign Frame, J-Channel, 48" x 73"	B	REF
-	372-4338	KIT, Sign Frame, J-Channel, 48" x 96"	C	REF
1	311-3613-001	BRACKET, Sign Frame, 12 Ga., HRS	A	2
-1a	311-3613-003	BRACKET, Sign Frame, 14 Ga., HRS	B, C	4
2	311-3613-002	BRACKET, Sign Frame, 14 Ga., HRS	A	4
-2a	311-3613-004	BRACKET, Sign Frame, 14 Ga., HRS	B	2
-2b	311-3613-008	BRACKET, Sign Frame, 12 Ga., HRS	C	2
3	311-3614	BRACKET, Mount, Sign Frames, 10 Ga.	A, C	16
-3a	311-3614	BRACKET, Mount, Sign Frames, 10 Ga.	B	14
4	FS070920	HHCS, 3/8”-16 x 1”, Gr. 5	A	32
-4a	FSP070920	HHCS, 3/8”-16 x 1”, Gr. 5, Plated	B	28
-4b	FSP070920	HHCS, 3/8”-16 x 1”, Gr. 5, Plated	C	32
5	FS230900	NUT, Lock, 3/8”-16, Gr. 5	A	32
-5a	FSP230900	NUT, Lock, 3/8”-16, Gr. 5, Plated	B	28
-5b	FSP230900	NUT, Lock, 3/8”-16, Gr. 5, Plated	C	32
6	FS510900	WASHER, Flat, 3/8”, Std., Plain	A	64
-6a	FSP510900	WASHER, Flat, 3/8", Std., Plated	B	56
-6b	FSP510900	WASHER, Flat, 3/8", Std., Plated	C	64
7	311-3613-010	BRACKET, Sign, 10 Ga., HRS	B	4

36" X 72" AND 36" X 48"J-CHANNEL SIGN FRAME KIT

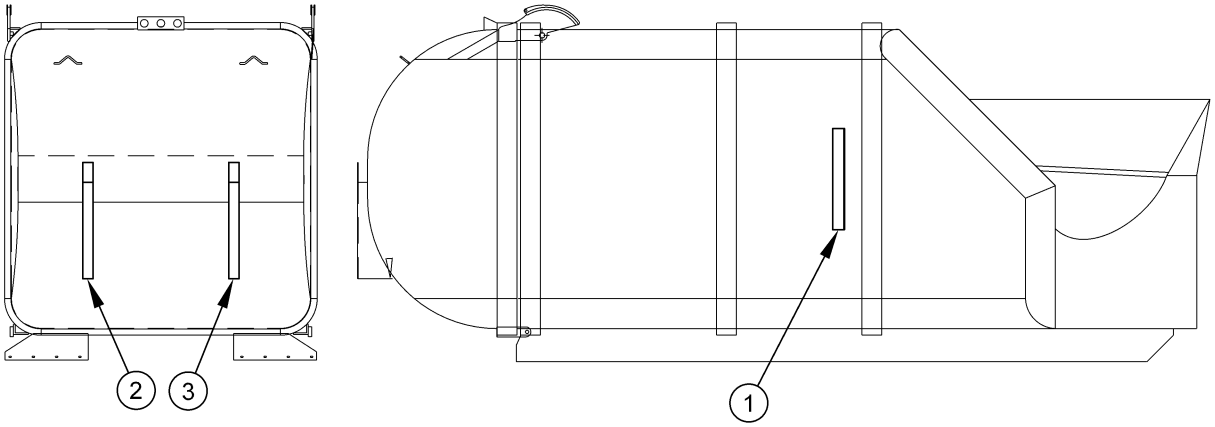
372-3107, 372-4339

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-3107	KIT, Sign Frame, J-Channel, 36" x 72"	A	REF
-	372-4339	KIT, Sign Frame, J-Channel, 36" x 48"	B	REF
1	311-3613-004	BRACKET, Sign Frame, 14 Ga., HRS	A	2
-1a	311-3613-003	BRACKET, Sign Frame, 14 Ga., HRS	B	2
2	311-3613-007	BRACKET, Sign Frame, 14 Ga., HRS	-	4
3	311-3614	BRACKET, Mount, Sign Frames, 10 Ga.	A	14
-3a	311-3614	BRACKET, Mount, Sign Frames, 10 Ga.	B	8
4	FS070920	HHCS, 3/8”-16 x 1”, Gr. 5	A	28
-4a	FSP070920	HHCS, 3/8”-16 x 1”, Gr. 5, Plated	B	16
5	FS230900	NUT, Lock, 3/8”-16, Gr. 5	A	28
-5a	FSP230900	NUT, Lock, 3/8”-16, Gr. 5, Plated	B	16
6	FS510900	WASHER, Flat, 3/8”, Std., Plain	A	56
-6a	FSP510900	WASHER, Flat, 3/8", Std., Plated	B	32

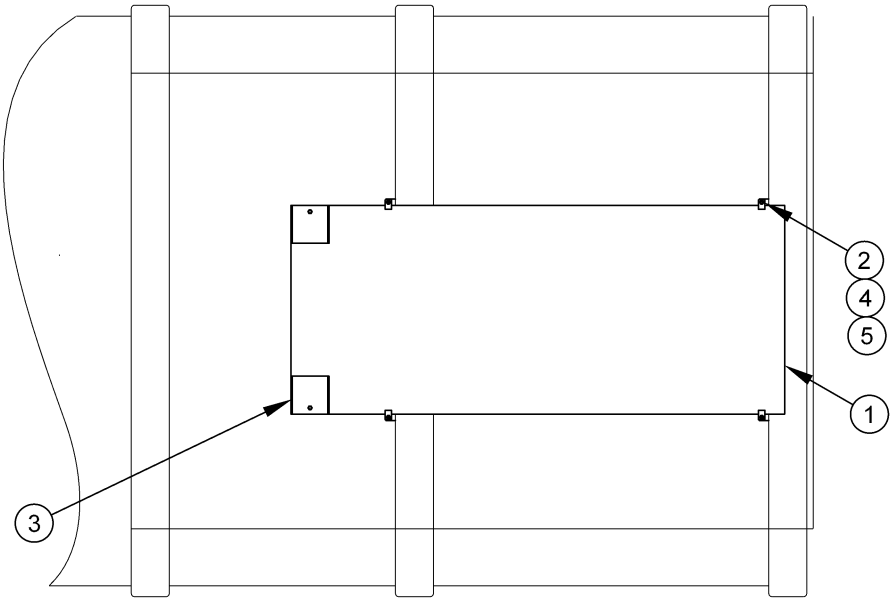
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SIGN BRACKET KIT
272-8346



SS/CS SIGN FRAME KIT
272-8908



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SIGN BRACKET KIT
272-8346

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	272-8346	KIT, Sign Bracket	-	REF
1	311-0184	BRACKET, Sign Frame, 12 Ga., HRS	-	2
2	311-0185-00L	BRACKET, Tailgate, SS	-	1
3	311-0185-00R	BRACKET, Tailgate, CS	-	1

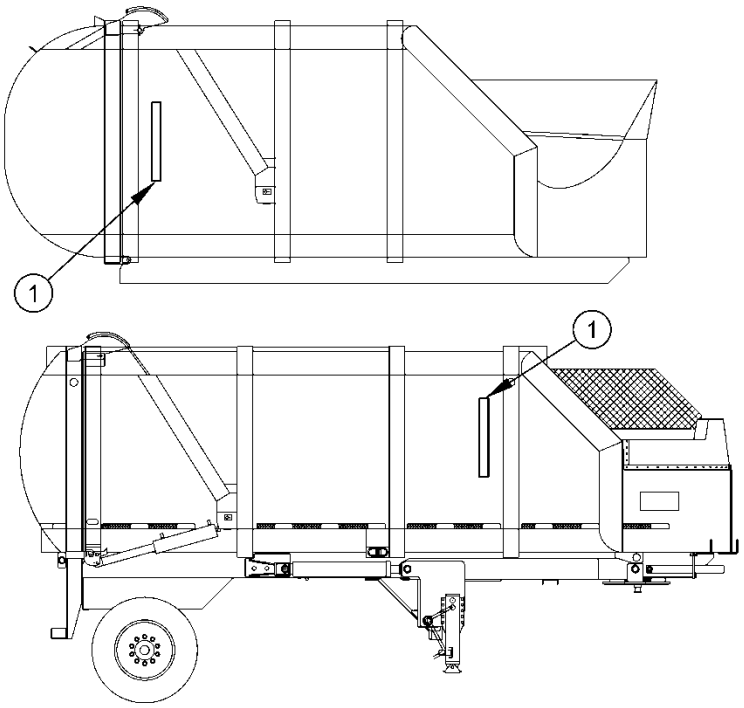
SS/CS SIGN FRAME KIT
272-8908

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	272-8908	KIT, Sign Frame, SS/ CS	-	REF
1	234-1100	SIGN, Side, Plate	-	2
2	311-0723	BRACKET, Sign, Side	-	16
3	311-0738	BRACKET, Mount, Sign Frame	-	2
4	FS090920	HHCS, 3/8” x 1”, Gr. 5	-	12
5	FS230900	NUT, Lock, 3/8”-16, Gr. 5	-	12

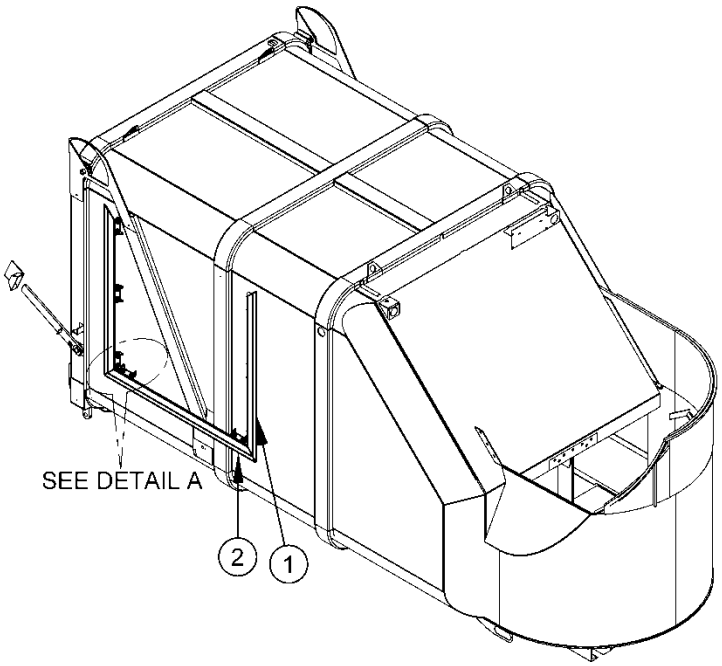
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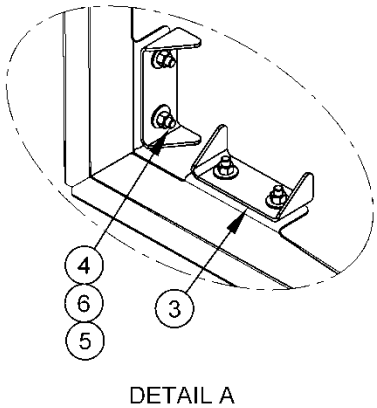
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SIGN BRACKET KIT
272-8910



60" X 60" SIGN FRAME KIT
372-3106





DETAIL A

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SIGN BRACKET KIT
272-8910

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	272-8910	KIT, Sign Bracket, Side Only	-	REF
1	311-0184	BRACKET, Sign Frame, 12 Ga., HRS	-	2

60" X 60" SIGN FRAME KIT
372-3106

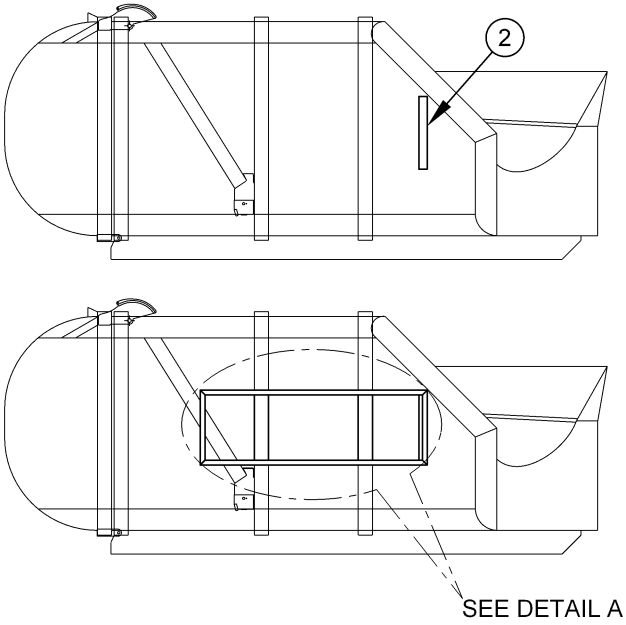
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-3106	KIT, Sign Frame, 60”x 60”	-	REF
1	311-3613-005	BRACKET, Frame, Sign	-	4
2	311-3613-006	BRACKET, Frame, Sign	-	2
3	311-3614	BRACKET, Mount, Sign Frames, 10 Ga.	-	16
4	FS070920	HHCS, 3/8”-16 x 1”, Gr. 5	-	32
5	FS230900	NUT, Lock, 3/8”-16, Gr. 5	-	32
6	FS510900	WASHER, Flat, 3/8”, Std., Plain	-	64

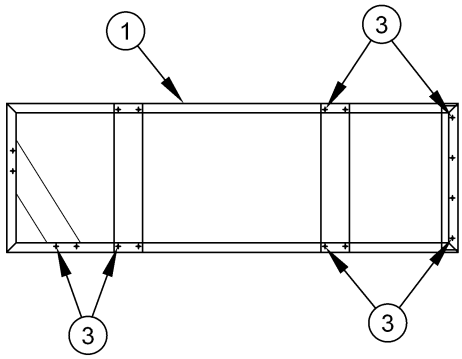
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NORCAL SIGN BRACKET KIT

372-0980

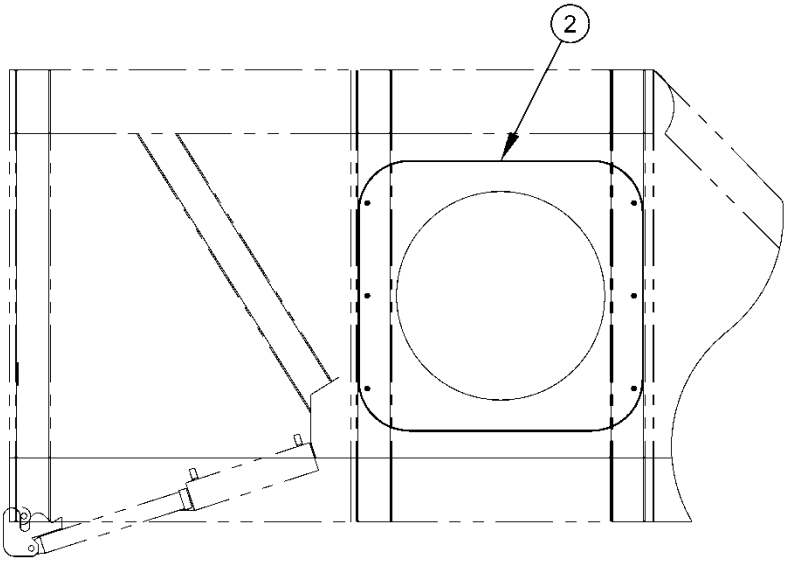




DETAIL A

BFI SIGN FRAME INSTALLATION

272-6738



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NORCAL SIGN BRACKET KIT

372-0980

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-0980	KIT, Sign Bracket, Norcal	-	REF
1	237-8767	FRAME, Sign, 2-1/4” x 95-1/2” x 31-1/2” OD	-	2
2	311-0184	BRACKET, Sign Frame, 12 Ga., HRS	-	2
3	FS370608	RIVETS, 3/16” x 5/16”	-	32

BFI SIGN FRAME INSTALLATION

272-6738

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	272-6738	INSTALLATION, Sign Frame, BFI	-	REF
-1	-	SIGN, BFI	-	2
2	237-5830	FRAME, Sign, BFI	-	2
-3	047-2151-011	SCREW, Tek, 1/4”-14 x 1”	-	18

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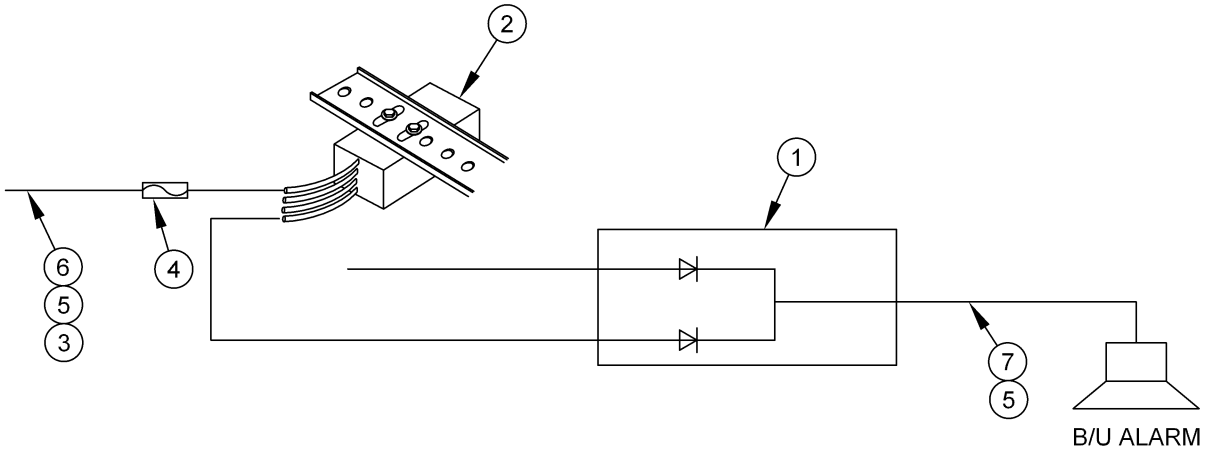
BACK-UP ALARMS KITS

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CALIFORNIA BACK-UP ALARM

272-6409



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CALIFORNIA BACK-UP ALARM

272-6409

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	272-6409	ALARM, Back-Up, California	-	REF
1	108-5705	ASSEMBLY, Diode, Blocking	-	1
2	272-5594	SENSOR and BRACKET	-	1
3	036-1640-208	TIE, Wire, 7-1/25", #50	-	REF
4	108-0647	HOLDER, Fuse, In-Line	-	1
5	108-5034-001	LOOM, Electrical, Split Convoluted, Plastic, 1/4"	-	40'
6	108-5233-017	WIRE, Black, 16 Ga.	-	20'
7	108-5233-023	WIRE, Pink, 16 Ga.	-	20'

SPECIAL PRECO BACK-UP ALARM

272-6787, 372-3605

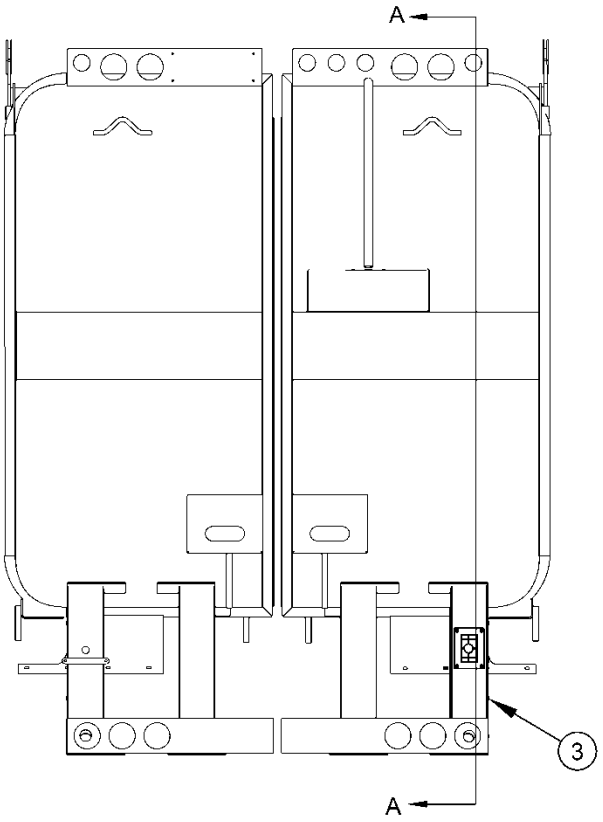
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	272-6787	ALARM, Back-Up, Special	A	REF
-	372-3605	ALARM, Back-Up, Preco	B	REF
-1	-	NA	-	REF
-2	108-5990	ALARM, Back-Up, Preco LDA-50	A	1
-2a	108-6852	ALARM, Back-Up, Preco 1040	B	1

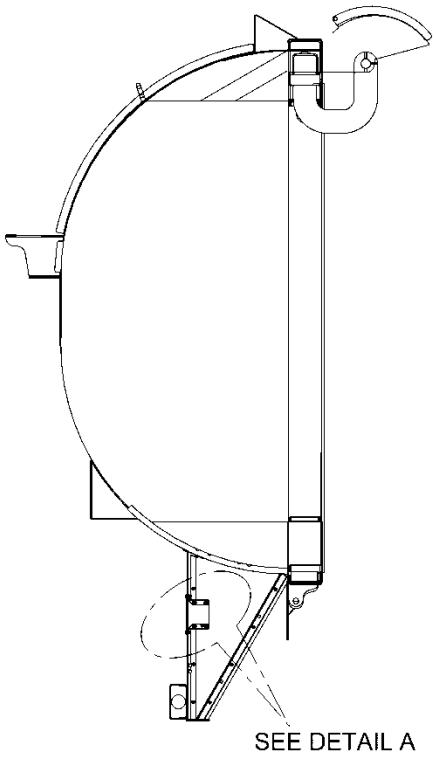
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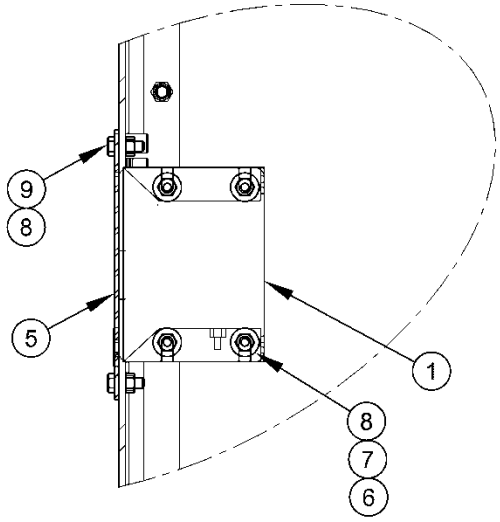
PRECO 1059 BACK-UP ALARM

372-5013





VIEW A A



DETAIL A

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PRECO 1059 BACK UP ALARM

372-5013

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-5013	ALARM, Back-Up, Preco 1059	-	REF
1	108-4797	ALARM, Back-up	-	1
-2	-	NA	-	REF
3	237-8051-001	BUMPER, Rear, Right, Weldment, Preco 1059 (Item Welded)	-	1
-4	263-1309-002	HARNESS, Alarm Adapter (See SM 10)	-	1
5	311-4262	BRACKET, Back-Up Alarm, HP 05 and Sierra (Item Welded)	-	1
6	FSP510700	WASHER, Flat, 1/4" Std., Plated	-	4
7	FSP230700	NUT, Lock, 1/4”-20, Gr. 5, Plated	-	4
8	FSP070715	HHCS, 1/4”-20 x 3/4”, Gr. 5, Plated	-	8
9	FSP280700	NUT, Hex, 1/4”-20, Plated	-	4

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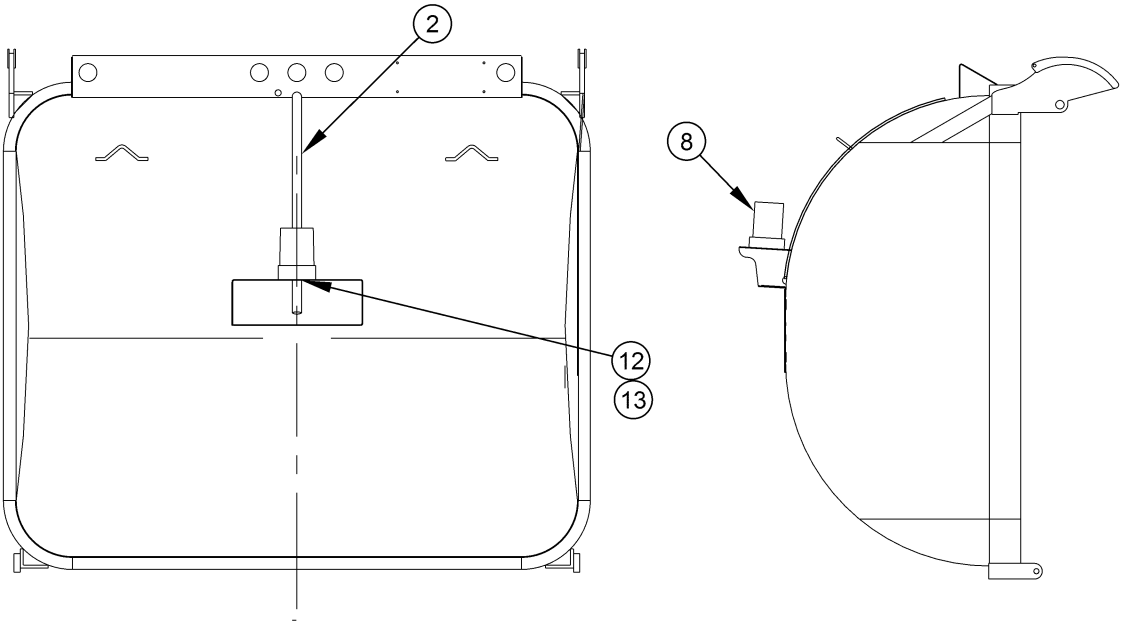
STROBE LIGHT KITS

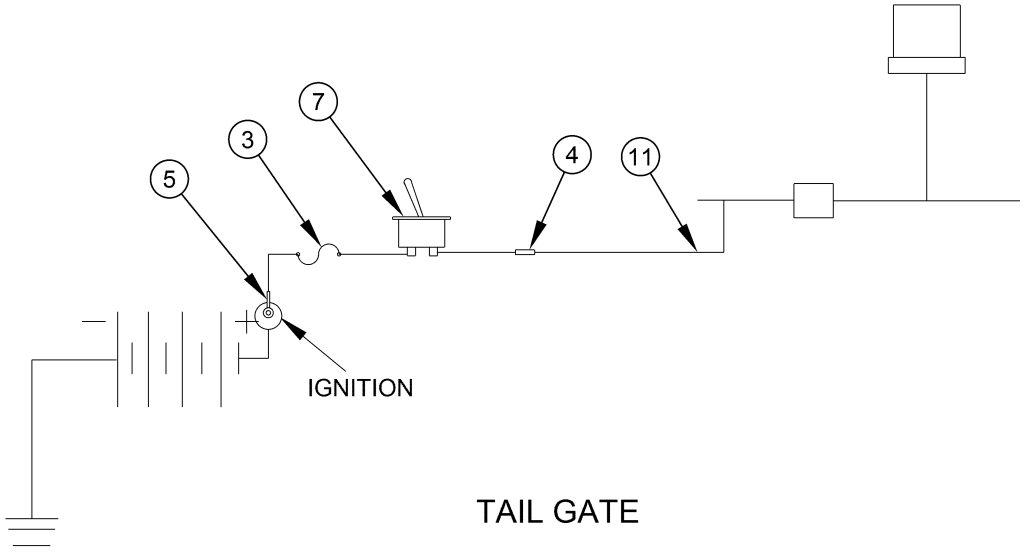
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STROBE LIGHT KIT

272-6673-001, 272-6673-002, 272-6673-003, 272-6673-004





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STROBE LIGHT KIT

272-6673-001, 272-6673-002, 272-6673-003, 272-6673-004

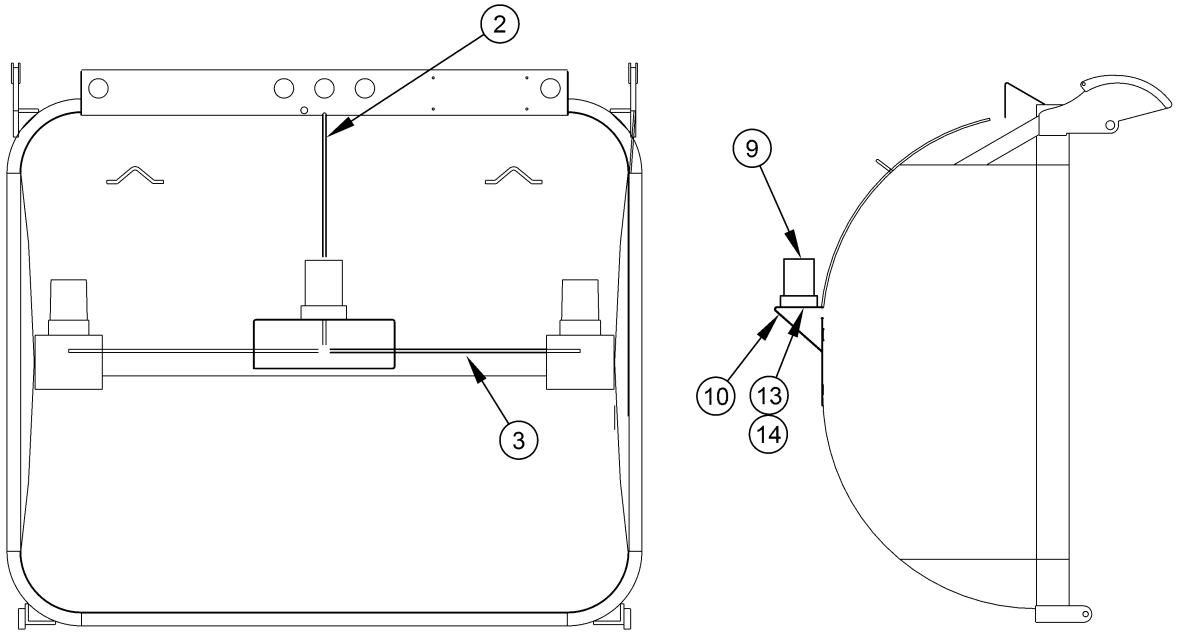
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	272-6673-001	KIT, Strobe Light, w/In Cab Switch	A	REF
-	272-6673-002	KIT, Strobe Light, w/Back-Up Switch	B	REF
-	272-6673-003	KIT, Strobe Light, w/Back Up and Pump “ON” Switch	C	REF
-	272-6673-004	KIT, Strobe Light, w/In Cab Switch and Back-Up	D	REF
-1	NA	-	-	-
2	035-3102	GUARD, Harness, Strobe, 1/2" OD, 18 Ga.	-	1
3	108-0647	HOLDER, Fuse, In-Line	A, D	1
4	108-1110-002	CONNECTOR, Butt, 14-16 Ga.	-	2
5	108-5702-011	TERMINAL, Ring	A, D	3
-6	108-5705	ASSEMBLY, Diode, Blocking	C, D	1
7	108-6815	SWITCH, Toggle	A, D	1
8	115-1232	KIT, Strobe Light w/Brush Guard (See SM 7)	-	1
-9	NA	-	-	-
-10	212-2029	DECAL, Strobe Light	-	REF
11	263-0281	HARNESS, Chassis (See SM 10)	-	REF
12	FS290500	NUT, Jam, 5/32”-24	-	3
13	FS420520	SCREW, Mach., Rd. Hd., 5/32”-24 x 1”	-	3

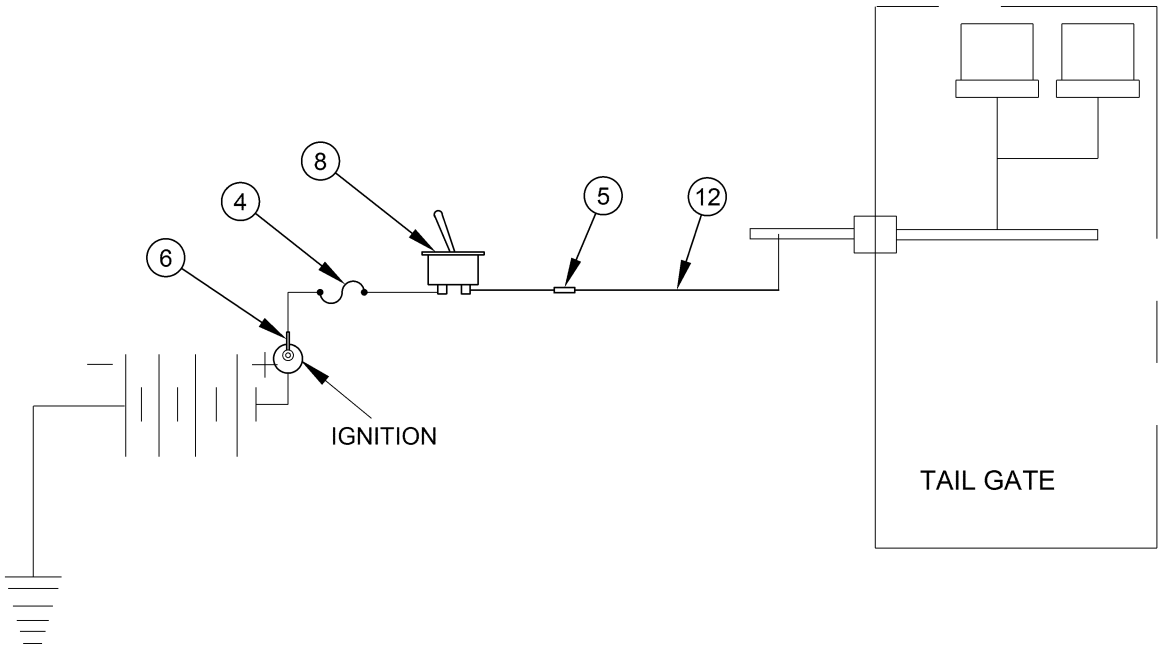
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DUAL STROBE LIGHT KIT

272-6677-001, 272-6677-002, 272-6677-003, 272-6677-004, 272-6677-005





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DUAL STROBE LIGHT KIT

272-6677-001, 272-6677-002, 272-6677-003, 272-6677-004, 272-6677-005

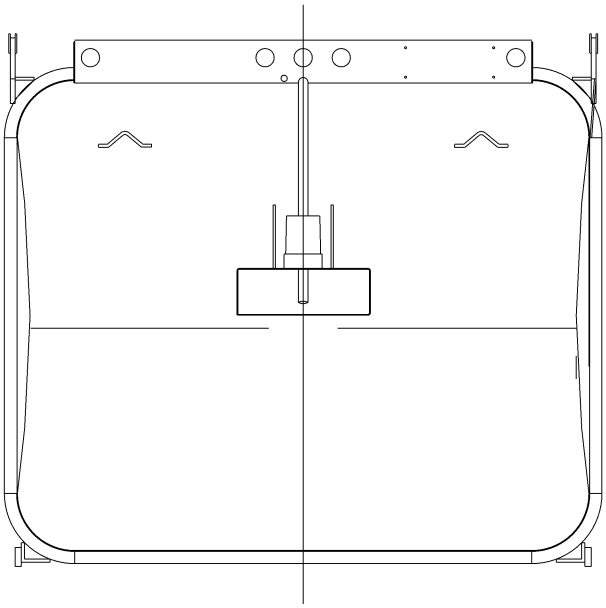
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	272-6677-001	KIT, Strobe Light, Dual w/In Cab Switch	A	REF
-	272-6677-002	KIT, Strobe Light, Dual w/Back Up Switch	B	REF
-	272-6677-003	KIT, Strobe Light, Dual w/Back Up and Pump “ON” Switch	C	REF
-	272-6677-004	KIT, Strobe Light, Dual w/In Cab Switch and Back Up	D	REF
-	272-6677-005	KIT, Strobe Light, Dual Strobe Brackets Only	E	REF
-1	NA	-	-	-
2	035-3102	GUARD, Harness, Strobe, 1/2" OD, 18 Ga.	-	1
3	035-3103	GUARD, Harness, Strobe, 1/2” OD	-	2
4	108-0647	HOLDER, Fuse, In-Line	A, D	1
5	108-1110-002	CONNECTOR, Butt, 14-16 Ga.	A, B, C, D	2
6	108-5702-011	TERMINAL, Ring	A, D	3
-7	108-5705	ASSEMBLY, Diode, Blocking	C, D	1
8	108-6815	SWITCH, Toggle	A, D	1
9	115-1232	KIT, Strobe Light w/Brush Guard (See SM 7)	A, B, C, D	2
10	211-8266	BRACKET, Strobe Light, #12 Ga., HRS	-	2
-11	212-2029	DECAL, Strobe Light	A, B, C, D	REF
12	263-0279	HARNESS, Tailgate (See SM 10)	A, B, C, D	REF
13	FS290500	NUT, Jam, 5/32”-24	A, B, C, D	6
14	FS420520	SCREW, Mach., Rd. Hd., 5/32”-24 x 1”	A, B, C, D	6

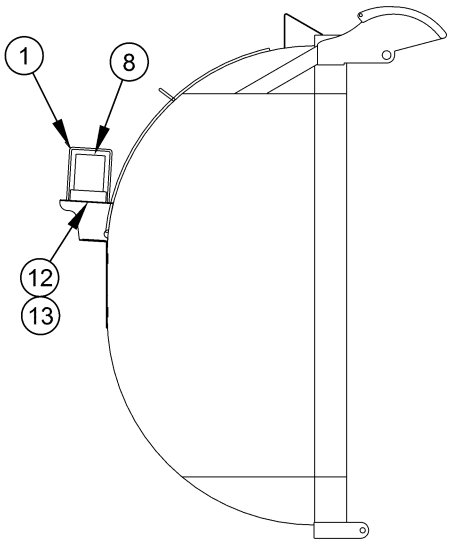
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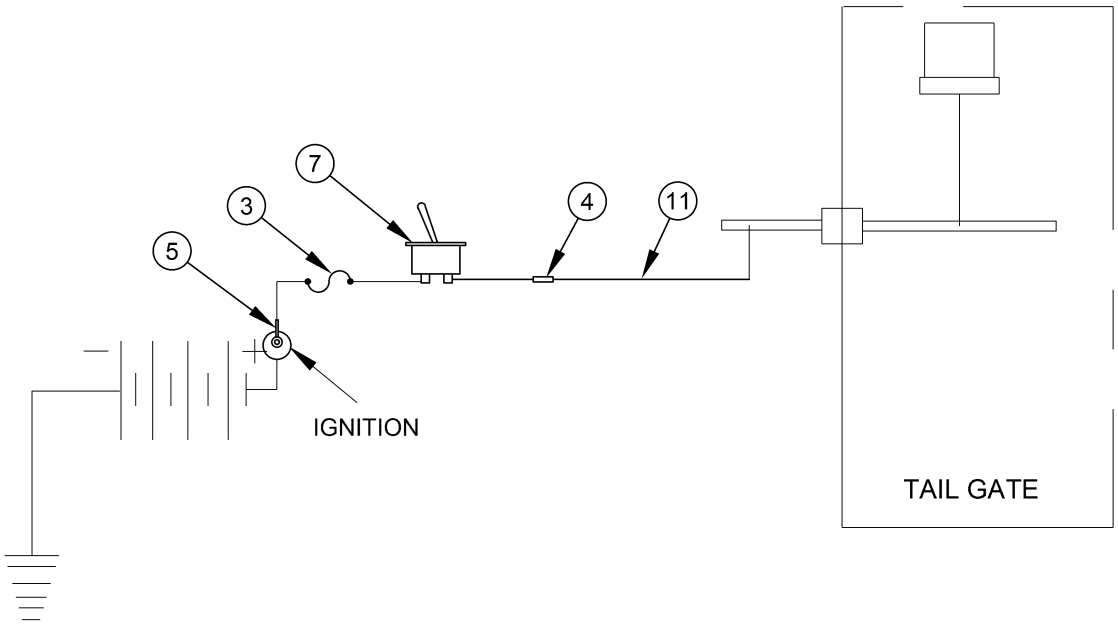
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BEACON LIGHT KIT

272-7258-001, 272-7258-002, 272-7258-003, 272-7258-004







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BEACON LIGHT KIT

272-7258-001, 272-7258-002, 272-7258-003, 272-7258-004

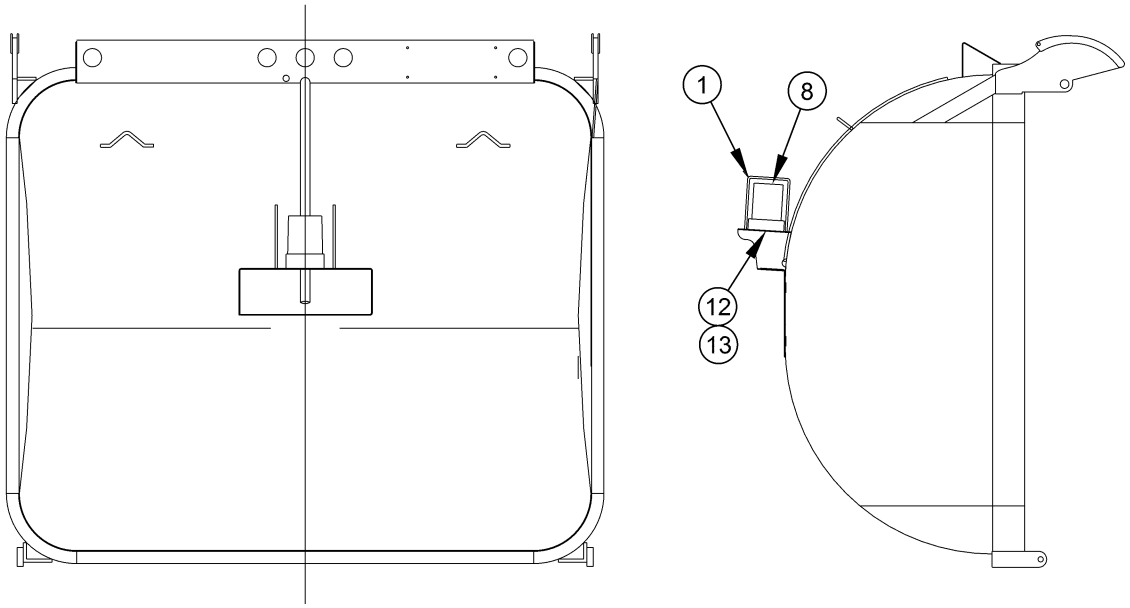
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	272-7258-001	KIT, Beacon Light, w/In Cab Switch	A	REF
-	272-7258-002	KIT, Beacon Light, w/Back-Up Switch	B	REF
-	272-7258-003	KIT, Beacon Light, w/Back Up and Pump “ON” Switch	C	REF
-	272-7258-004	KIT, Beacon Light, w/In Cab Switch and Back-Up	D	REF
1	035-2884	GUARD, Strobe Light, 3/8” SQ x 240” HR	-	2
-2	035-3102	GUARD, Harness, Strobe, 1/2" OD, 18 Ga.	-	1
3	108-0647	HOLDER, Fuse, In-Line	A, D	1
4	108-1110-002	CONNECTOR, Butt, 14-16 Ga.	-	2
5	108-5702-011	TERMINAL, Ring	A, D	3
-6	108-5705	ASSEMBLY, Diode, Blocking	C, D	1
7	108-6815	SWITCH, Toggle	A, D	1
8	115-0868	LIGHT, Beacon, Rotation	-	1
-9	NA	-	-	-
-10	212-1917	DECAL, Beacon Light	-	1
11	263-0279	HARNESS, Tailgate (See SM 10)	-	REF
12	FS290500	NUT, Jam, 5/32”-24	-	3
13	FS420520	SCREW, Mach., Rd. Hd., 5/32”-24 x 1”	-	3

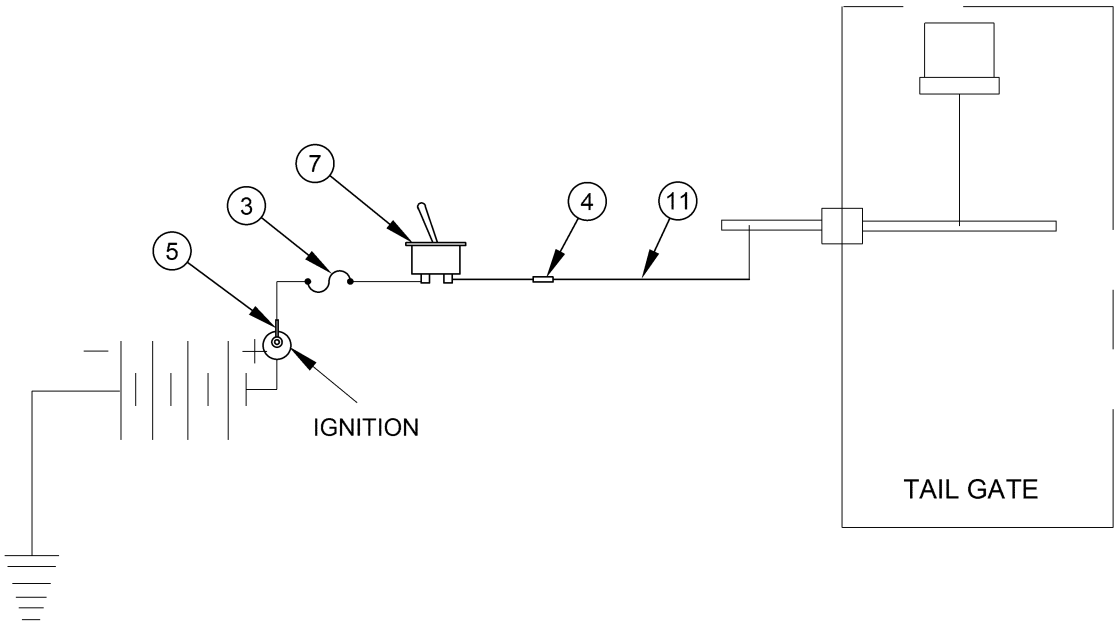
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CUSTOMER SUPPLIED STROBE LIGHT KIT

272-7308-001, 272-7308-002, 272-7308-003, 272-7308-004





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CUSTOMER SUPPLIED STROBE LIGHT KIT

272-7308-001, 272-7308-002, 272-7308-003, 272-7308-004

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	272-7308-001	KIT, Strobe Light, w/In Cab Switch, Customer Supplied	A	REF
-	272-7308-002	KIT, Strobe Light, w/Back-Up Switch, Customer Supplied	B	REF
-	272-7308-003	KIT, Strobe Light, w/Back-Up and Pump “ON” Switch,	-	
		Customer Supplied	C	REF
-	272-7308-004	KIT, Strobe Light, w/In Cab Switch and Back-Up, Customer Supplied	D	REF
1	035-2884	GUARD, Strobe Light, 3/8” SQ x 240” HR	-	2
-2	035-3102	GUARD, Harness, Strobe, 1/2" OD, 18 Ga.	-	1
3	108-0647	HOLDER, Fuse, In-Line	A, D	1
4	108-1110-002	CONNECTOR, Butt, 14-16 Ga.	-	2
5	108-5702-011	TERMINAL, Ring	A, D	3
-6	108-5705	ASSEMBLY, Diode, Blocking	C, D	1
7	108-6815	SWITCH, Toggle	A, D	1
8	-	LIGHT, Strobe	-	1
-9	NA	-	-	-
-10	212-2029	DECAL, Strobe Light	-	1
11	263-0279	HARNESS, Tailgate (See SM 10)	-	REF
12	FS290500	NUT, Jam, 5/32”-24	-	3
13	FS420520	SCREW, Mach., Rd. Hd., 5/32”-24 x 1”	-	3

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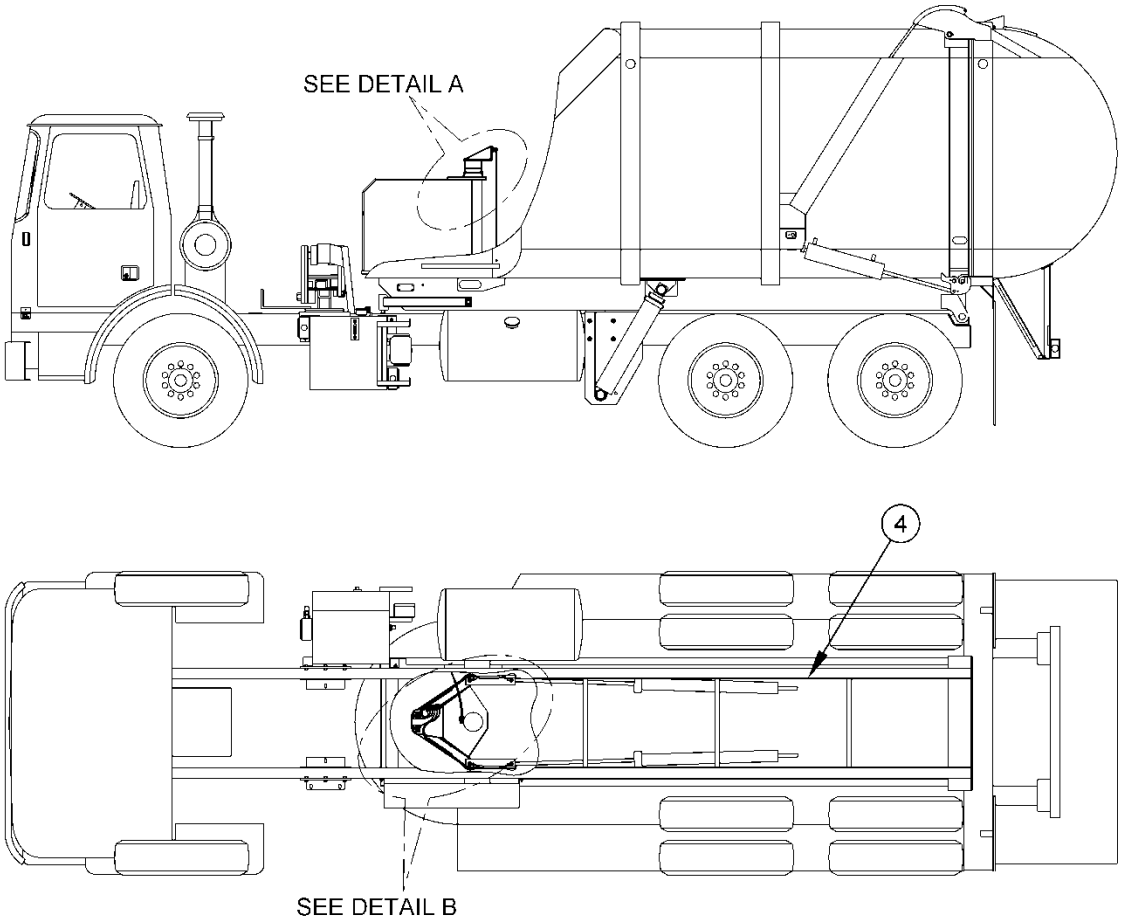
LUBRICATION SYSTEM KITS

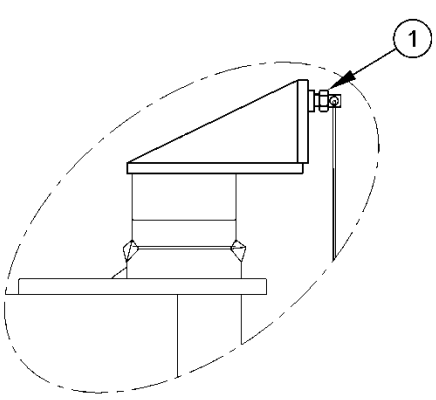
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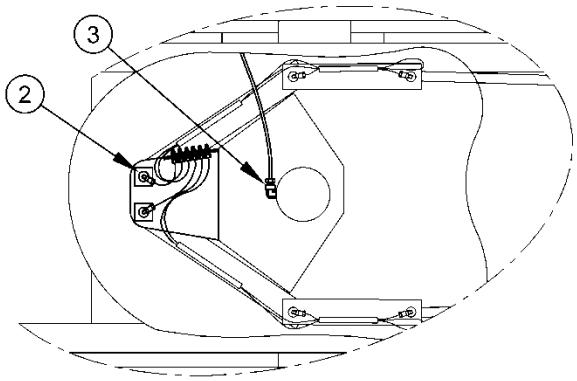
STANDARD LUBRICATION SYSTEM

272-8335





DETAIL A



DETAIL B

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STANDARD LUBRICATION SYSTEM

272-8335

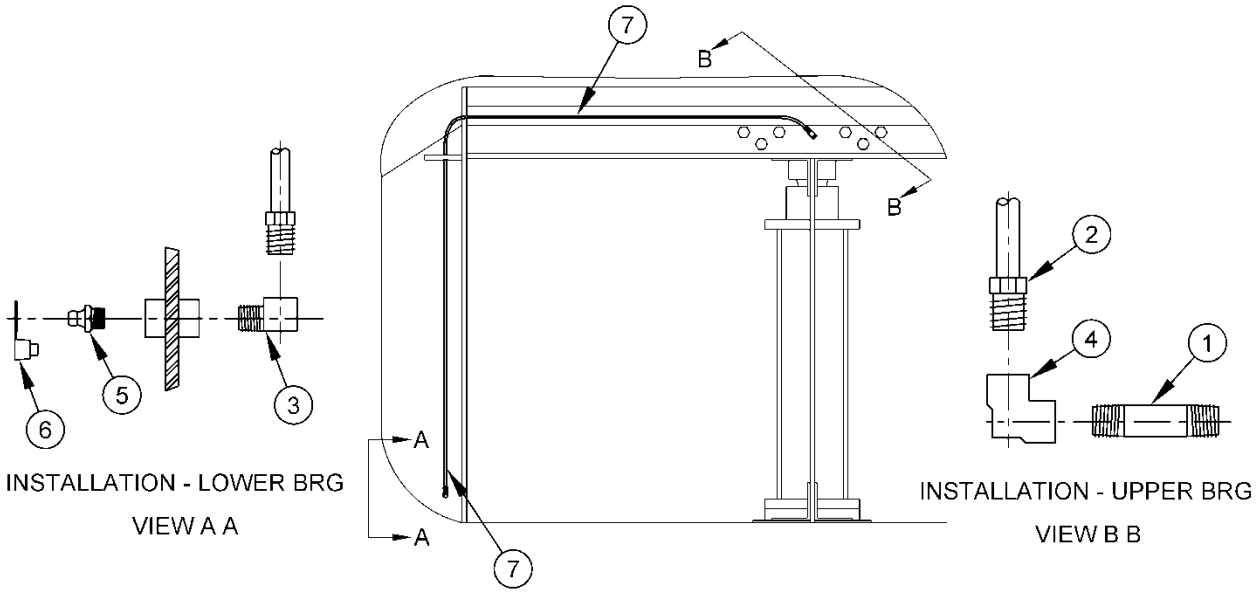
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	272-8335	SYSTEM, Lubrication, Standard	-	REF
1	059-0205	INSTALLATION, Lubrication, Upper Bearing (See Pg. 7037)	-	1
2	059-0223	INSTALLATION, Lubrication, Linkage (See Pg. 7037)	-	1
3	059-0224	INSTALLATION, Lubrication, Lower Bearing (See Pg. 7039)	-	1
4	FS190790	FITTING, Grease, 90°, 1/4"-28	-	2

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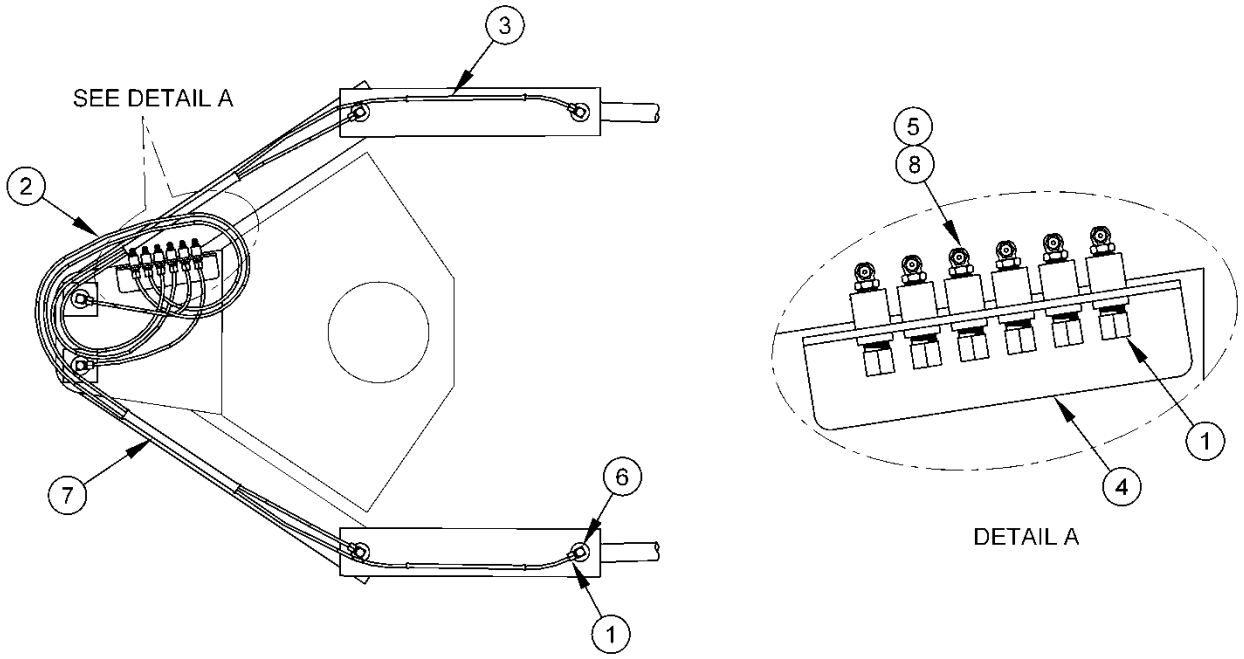
UPPER BEARING LUBRICATION INSTALLATION

059-0205



LINKAGE LUBRICATION INSTALLATION

059-0223



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UPPER BEARING LUBRICATION INSTALLATION
059-0205

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	059-0205	INSTALLATION, Lubrication, Upper Bearing	-	REF
1	054-8927-001	NIPPLE, Hex, 1/4”-1/8”, Brass	-	1
2	054-9654	LINE, Lubrication, Upper Bearing, 3/16” OD, 1/8” NPT	-	1
3	054-5866	ADAPTER, 90°, 3/16” Inverted Flare x 1/8” NPT	-	1
4	054-9674	ADAPTER, 90°, Female, 3/16” Inverted Flare x 1/8” NPT	-	1
5	FS190700	FITTING, Grease, Str., 1/4"-28	-	1
6	042-1393	CAP, Zerk	-	1
7	036-1645-002	CLAMPS, Steel Tube, 3/16” Dia.	-	4

LINKAGE LUBRICATION INSTALLATION
059-0223

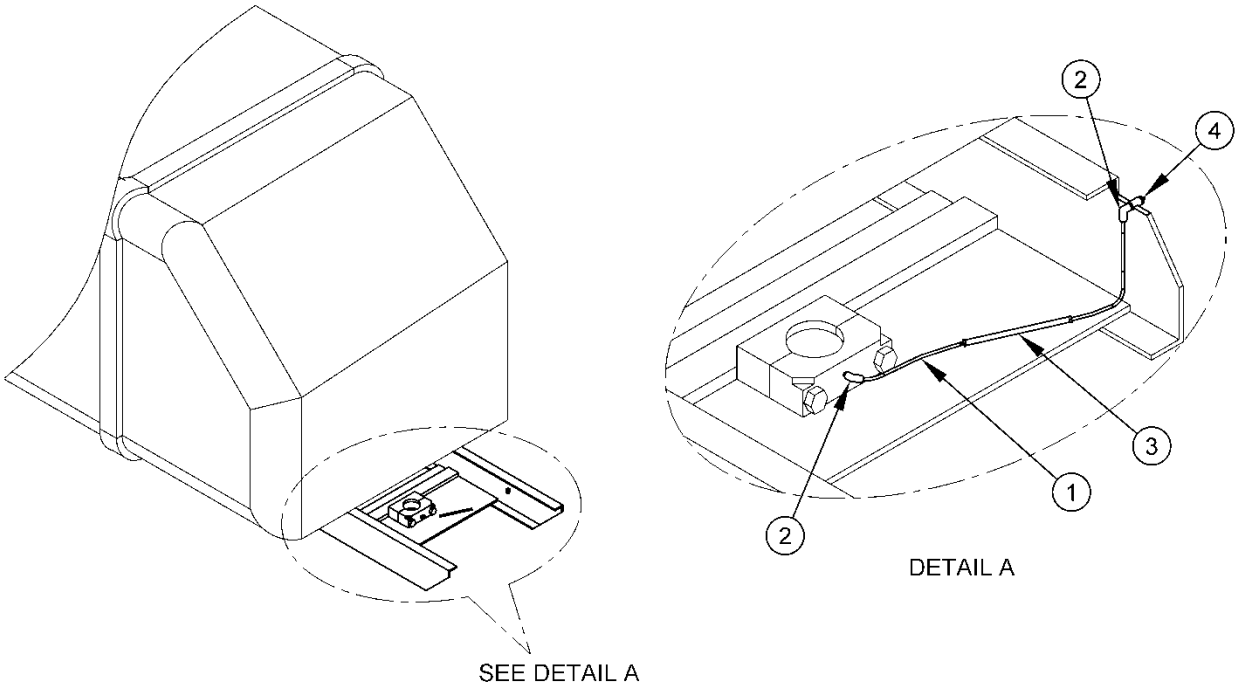
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	059-0223	INSTALLATION, Lubrication, Linkage	-	REF
1	272-8331-008	CONNECTOR, Str., 1/8” NPT-5/16” Air	-	12
2	272-6808-023	TUBING, 5/16” Dia. x 760”	-	20'
3	054-8944-008	TUBING, Steel, Flared, 8”	-	2
4	059-0206	ASSEMBLY, Manifold, Lubrication (Item Welded)	-	1
5	042-1393	CAP, Zerk	-	6
6	272-8330-002	ELBOW, Swivel, 1/4"	-	6
7	354-0059-010	TUBING, Steel, Flared, 10”, 0.875” x 0.065” Wall SAE	-	2
8	FS190490	FITTING, Grease, 1/8” NPT, 90°	-	6

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LOWER BEARING LUBRICATION INSTALLATION

059-0224



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LOWER BEARING LUBRICATION INSTALLATION
059-0224

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	059-0224	INSTALLATION, Lubrication, Lower Bearing	-	REF
1	272-6808-023	TUBING, 5/16” Dia. x 760”	-	3'
2	272-8331-009	FITTING, Lubriquip, 5/16” Air Line x 1/8” NPT	-	2
3	054-8944-008	TUBING, Steel, Flared, 8”	-	1
4	FS190400	FITTING, Grease, Str., 1/8” NPT	-	1

36 POINT AUTO LUBRICATION KIT
272-8332

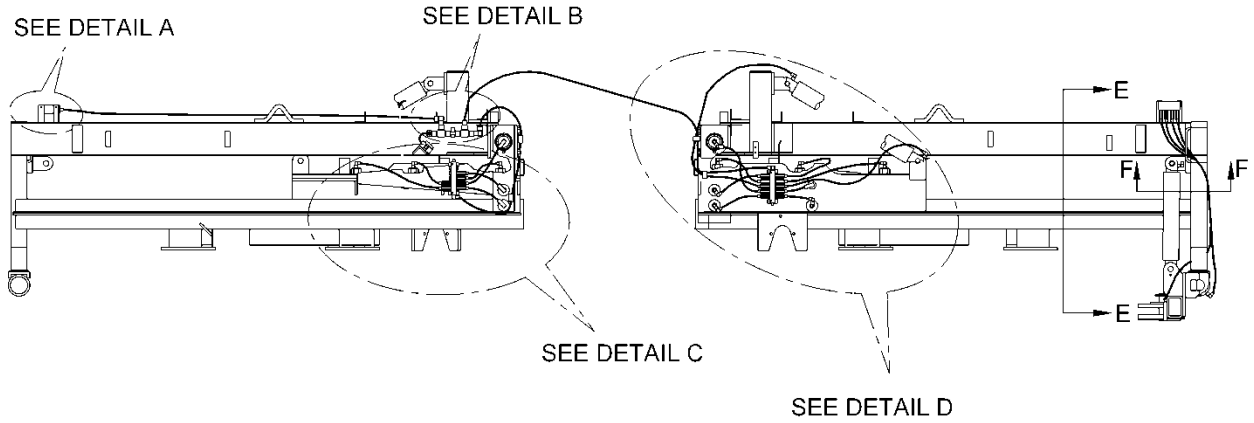
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	272-8332	KIT, Auto Lubrication, 36 Point	-	REF
-1	272-8223	ASSEMBLY, Loader, Lubrication Kit (See Pg. 7045)	-	1
-2	272-8224	KIT, Lubrication, Packer Assembly (See Pg. 7053)	-	1
-3	372-1645	INSTALLATION, Pump, Grease Jockey (See Pg. 7057)	-	1

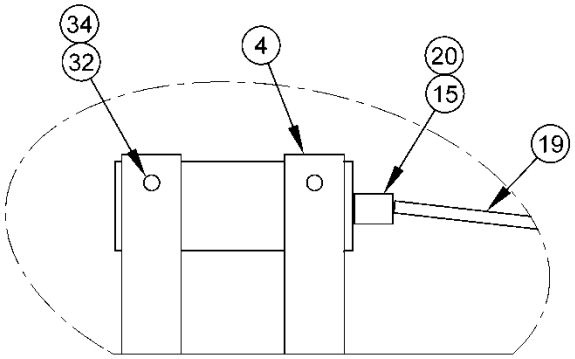
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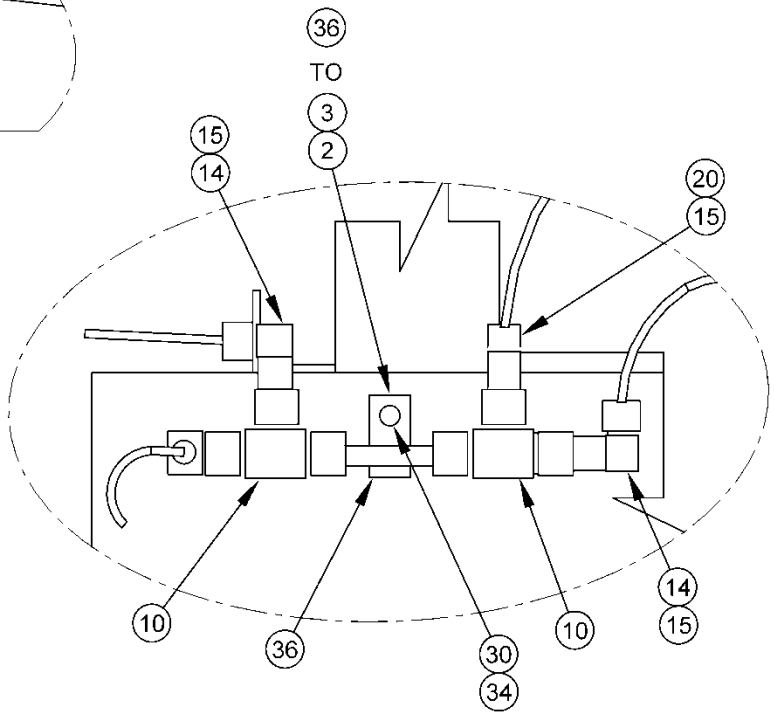
LOADER ASSEMBLY LUBRICATION KIT

272-8223





DETAIL A



DETAIL B

SHEET 1 OF 3

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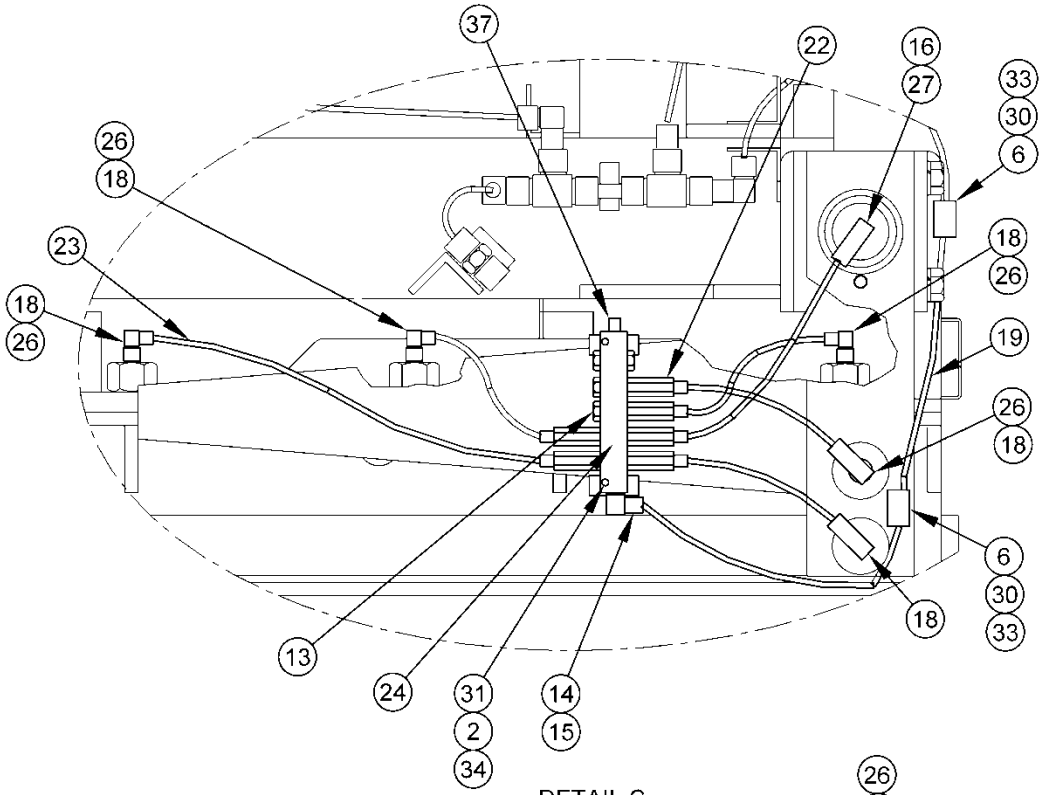
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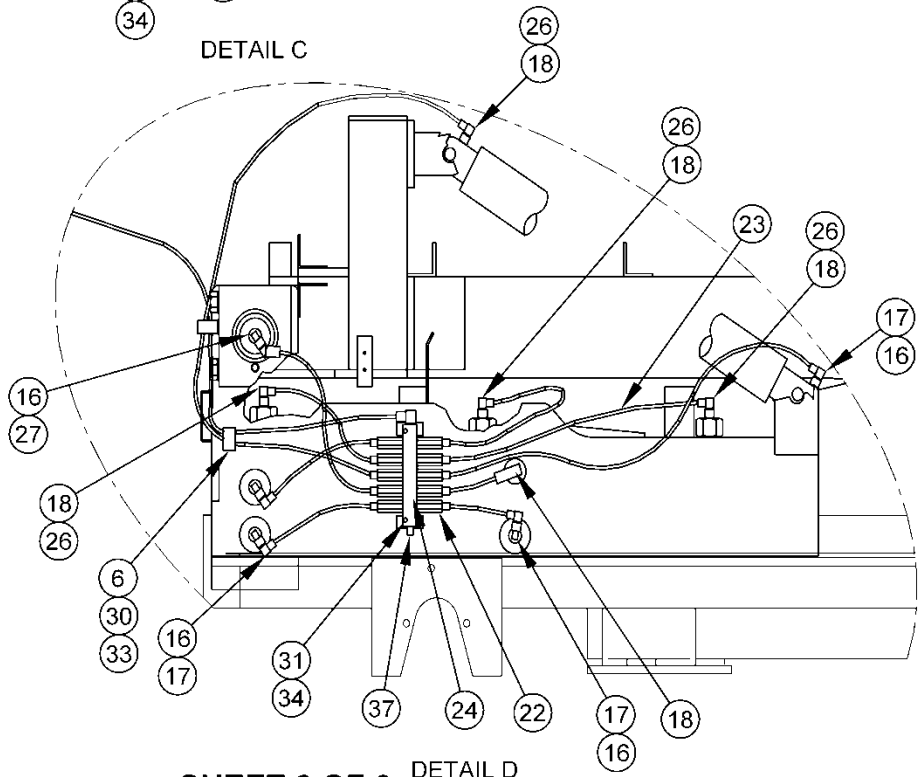
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LOADER ASSEMBLY LUBRICATION KIT

272-8223



DETAIL C



DETAIL D

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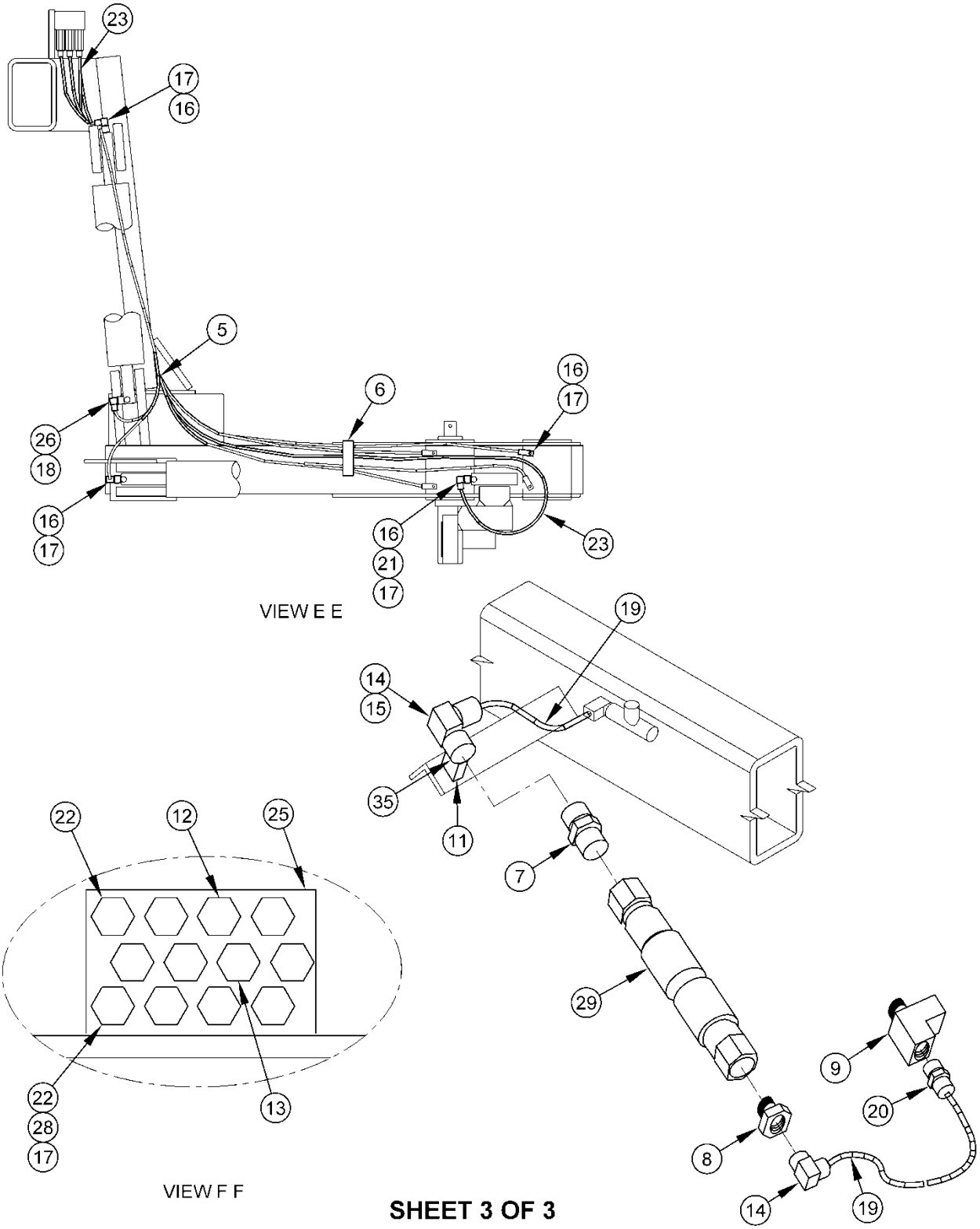
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LOADER ASSEMBLY LUBRICATION KIT

272-8223



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LOADER ASSEMBLY LUBRICATION KIT

272-8223

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	272-8223	KIT, Lubrication, Loader Assembly	-	REF
-1	272-8330	KIT, Lubrication, Loader	-	1
2	021-3755	BAR, Weld, 1/2” x 1” HR Bar	-	5
3	021-3756	BAR, Weld, 1/2” x 1” HR Bar	-	1
4	021-3757	BAR, Weld, 1/2” x 1” HR Bar	-	2
5	035-2722-002	GUARD, Faber, Hose, 0.85” ID	-	3'
6	036-1125-015	CLAMPS, Tube/Wire, 1”	-	4
7	054-3526-004	CONNECTOR, 7/16”-20 Male JIC x 1/4” Male NPT	-	1
8	054-3532-014	CONNECTOR, Female, Tube to Female, 1/4" x 1/4" x 7/16”-20 JIC	-	1
9	054-9160-003	TEE, Run, Male, 1/4" NPT	-	1
10	054-9715-002	FITTING, Tee, Steel, 1/4" NPT	-	2
11	080-1629	STOP, Body Prop, 3/4" SQ, HR Bar	-	1
12	272-6808-004	ASSEMBLY, Meter, #3	-	REF
13	272-6808-005	PLUG, Meter	-	REF
14	272-6808-011	ELBOW, 5/16” x 1/4” NPT	-	REF
15	272-6808-016	INSERT, 5/16”	-	REF
16	272-6808-019	ELBOW, 1/4"-28 x 1/8” NPT	-	REF
17	272-6808-020	CONNECTOR, 3/16” T x 1/8” NPT	-	REF
18	272-6808-022	ELBOW, Male, 3/16” T x 1/8” NPT	-	REF
19	272-6808-023	TUBING, 5/16” Dia. x 760”	-	REF
20	272-8330-001	CONNECTOR, Str., 1/4” NPT-5/16"	-	REF
21	272-8330-002	ELBOW, Swivel, 1/4"	-	REF
22	272-8330-003	ASSEMBLY, Meter, #2	-	REF
23	272-8330-004	TUBING, Line, 3/16"	-	REF
24	272-8330-005	MANIFOLD, Bar, 10 Port	-	REF
25	272-8330-006	MANIFOLD, 12 Port	-	REF
26	354-0083	ADAPTER, 1/4"-28 x 1/8” NPT	-	8
27	354-0084	ELBOW, 1/4"-28 M to 1/8” F NPT	-	2
28	354-0508	CONNECTOR, Female, 1/8”-27 NPT Thd., 1/2"-24 Thd.	-	1
29	QC1-FCFC-076	ASSEMBLY, Hose, 1/4”, 37° JIC Female Swivel, Pipe, 76”	-	1
30	FS070720	HHCS, 1/4”-20 x 1’’, Gr. 5	-	4
31	FS070723	HHCS, 1/4"-20 x 1-3/8”, Gr. 5	-	4
32	FS070740	HHCS, 1/4”-20 x 3”, Gr. 5, Plated	-	2
33	FS230700	NUT, Lock, 1/4”-20, Gr. 5	-	3
34	FS520700	WASHER, Flat, 1/4" SAE, Plain	-	7
35	FS640700	COUPLING, Steel Pipe, Full, 1/4”	-	1
36	FS880740	NIPPLE, Std., Black, 1/4" x 3”	-	1
37	FS900700	PLUG, Pipe, Iron, 1/4"	-	2

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LOADER LUBRICATION KIT

272-8330

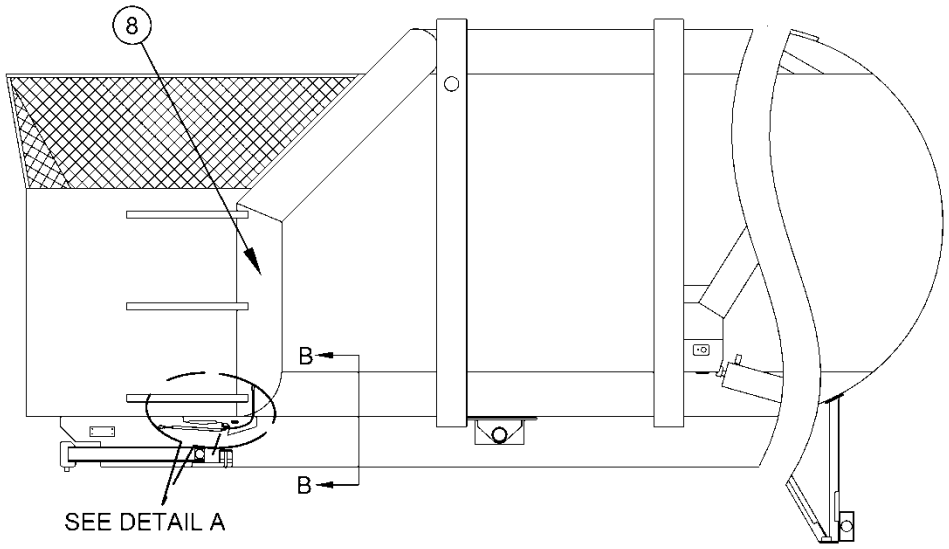
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-	272-8330	KIT, Lubrication, Loader	-	REF
-1	272-6808-004	ASSEMBLY, Meter, #3	-	4
-2	272-6808-005	PLUG, Meter	-	6
-3	272-6808-011	ELBOW, 5/16” x 1/4” NPT	-	7
-4	272-6808-016	INSERT, 5/16”	-	1 BAG
-5	272-6808-019	ELBOW, 1/4"-28 x 1/8” NPT	-	15
-6	272-6808-020	CONNECTOR, 3/16” T x 1/8” NPT	-	14
-7	272-6808-022	ELBOW, Male, 3/16” T x 1/8” NPT	-	11
-8	272-6808-023	TUBING, 5/16” Dia. x 720"	-	60’
-9	272-8330-001	UNION, 1/4" NPT x 5/16” Lube	-	3
-10	272-8330-002	ELBOW, Swivel, 1/8” NPT	-	1
-11	272-8330-003	METER, #2	-	22
-12	272-8330-004	LINE, Lube, 3/16”	-	130’
-13	272-8330-005	MANIFOLD, 10 Port	-	2
-14	272-8330-006	MANIFOLD, 12 Port	-	1

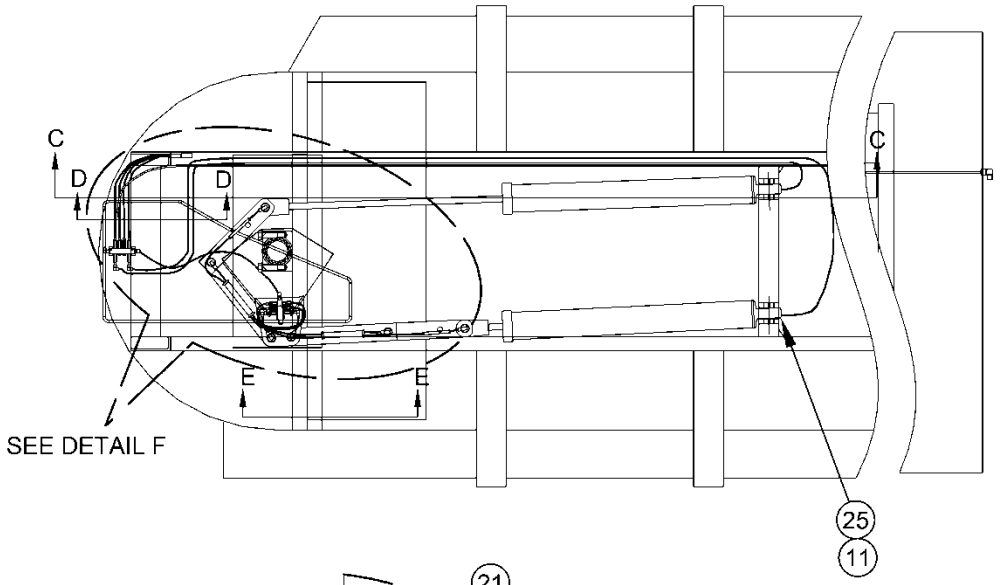
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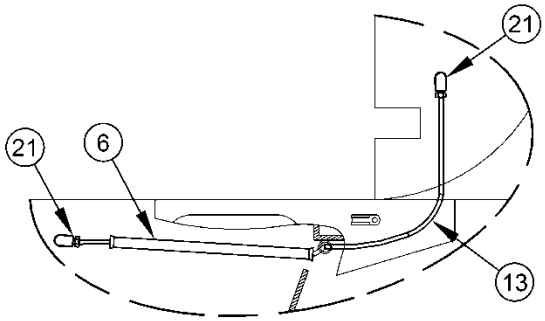
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PACKER ASSEMBLY LUBRICATION KIT

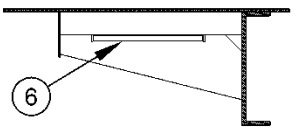
272-8224







DETAIL A



VIEW B B

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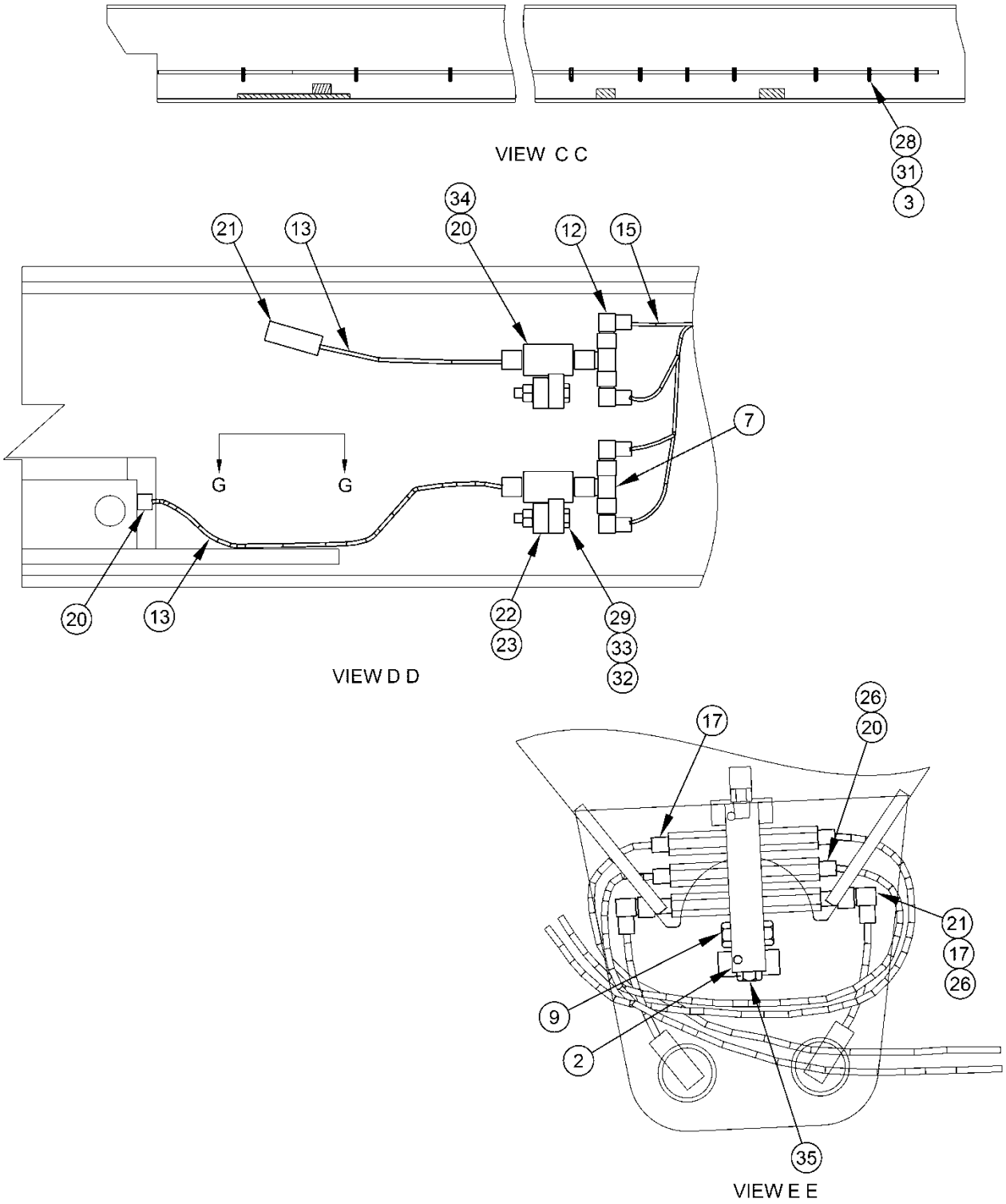
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PACKER ASSEMBLY LUBRICATION KIT

272-8224



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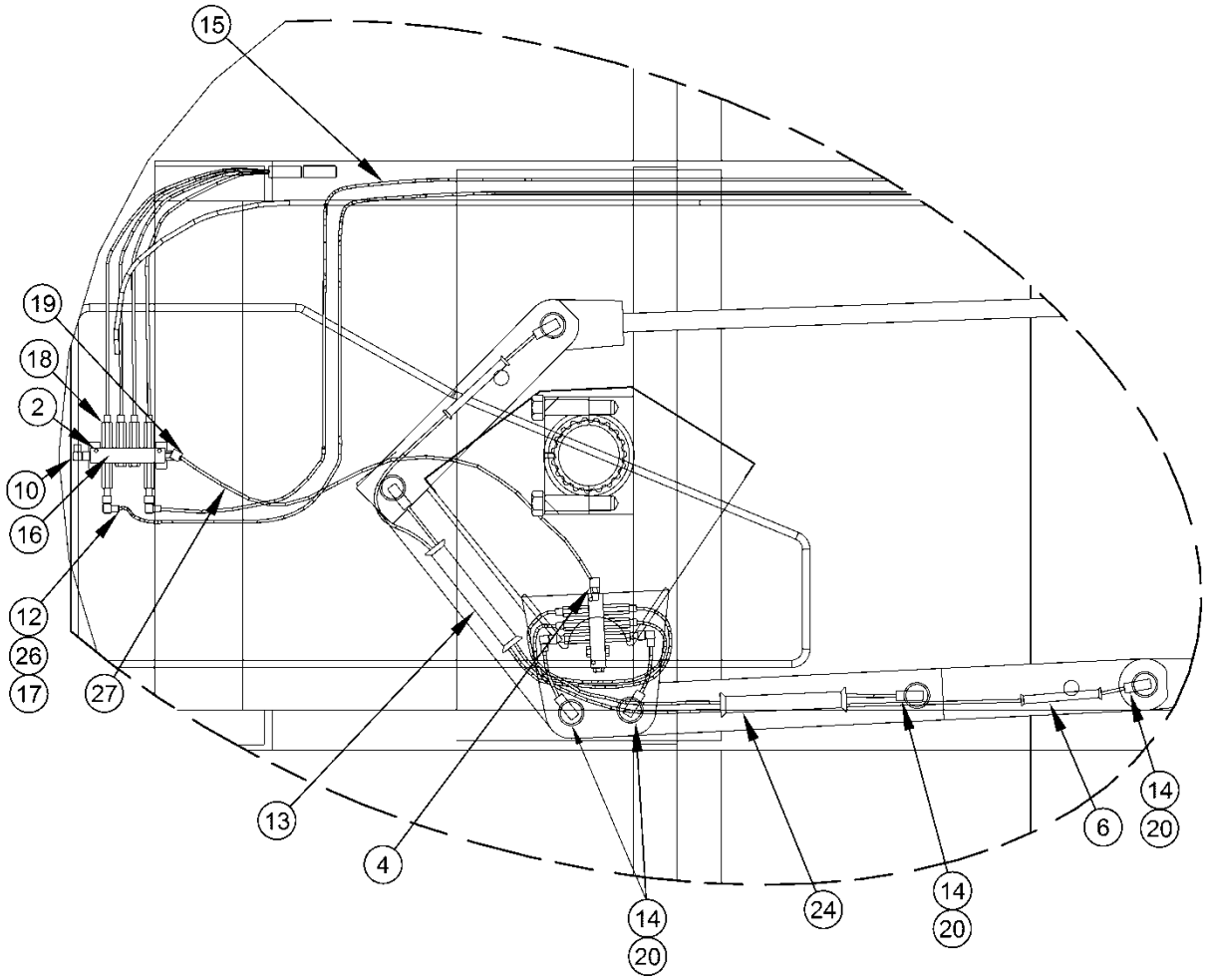
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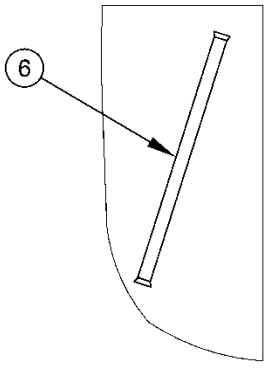
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PACKER ASSEMBLY LUBRICATION KIT

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PACKER ASSEMBLY LUBRICATION KIT

272-8224

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	272-8224	KIT, Lubrication, Packer Assembly	-	REF
-1	272-8331	KIT, Lubrication, Body	-	1
2	021-3755	BAR, Weld, 1/2” x 1” HR Bar	-	4
3	036-1122-010	CLAMPS, Wire, Tube, 5/8”-27/32”	-	20
4	054-3526-004	CONNECTOR, 7/16”-20 Male JIC x 1/4” Male NPT	-	2
-5	054-8927-001	NIPPLE, Hex, 1/4”-1/8”, Brass	-	2
6	054-8944-008	TUBING, Steel, Flared, 8”	-	3
7	054-9715-001	FITTING, Tee, Steel, 1/8” NPT	-	2
8	059-0205	INSTALLATION, Lubrication, Upper Bearing (See Pg. 7037)	-	1
9	272-6808-005	PLUG, Meter	-	REF
10	272-6808-011	ELBOW, 5/16” x 1/4” NPT	-	REF
11	272-6808-020	CONNECTOR, 3/16” T x 1/8” NPT	-	REF
12	272-6808-022	ELBOW, Male, 3/16” T x 1/8” NPT	-	REF
13	272-6808-023	TUBING, 5/16” Dia. x 760”	-	REF
14	272-8330-002	ELBOW, Swivel, 1/4"	-	REF
15	272-8330-004	TUBING, Line, 3/16"	-	REF
16	272-8331-003	MANIFOLD, 8 Port	-	REF
17	272-8331-004	METER, #4	-	REF
18	272-8331-005	METER, #8	-	REF
19	272-8331-007	ELBOW, Swivel, 1/4" NPT	-	REF
20	272-8331-008	CONNECTOR, Str., 1/8” NPT-5/16” Air	-	REF
21	272-8331-009	FITTING, Lubriquip, 5/16” Air Line x 1/8” NPT	-	REF
22	311-0169	BRACKET, 1/4" x 1” HR Bar	-	2
23	311-0177	BRACKET, 1/4" x 1” HR Bar	-	2
24	354-0059-010	TUBING, Steel, Flared, 10”, 0.875” x 0.065” Wall SAE	-	2
25	354-0084	ELBOW, 1/4"-28 M to 1/8” F NPT	-	2
26	354-0508	CONNECTOR, Female, 1/8”-27 NPT Thd., 1/2"-24 Thd.	-	8
27	QC1-FCFC-042	ASSEMBLY, Hose, 1/4”, 37° JIC Female Swivel, Pipe, 42”	-	1
28	FS070711	HHCS, 1/4"-20 x 1/2", Gr. 5	-	20
29	FS070720	HHCS, 1/4”-20 x 1’’, Gr. 5	-	2
-30	FS070723	HHCS, 1/4"-20 x 1-3/8”, Gr. 5	-	2
31	FS220700	NUT, Lock, 1/4"	-	20
32	FS280700	NUT, Hex, 1/4”-20	-	2
33	FS520700	WASHER, Flat, 1/4" SAE, Plain	-	6
34	FS640400	COUPLING, Black Pipe, Std., 1/8” NPT	-	2
35	FS900700	PLUG, Pipe, Iron, 1/4"	-	1

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BODY LUBRICATION KIT

272-8331

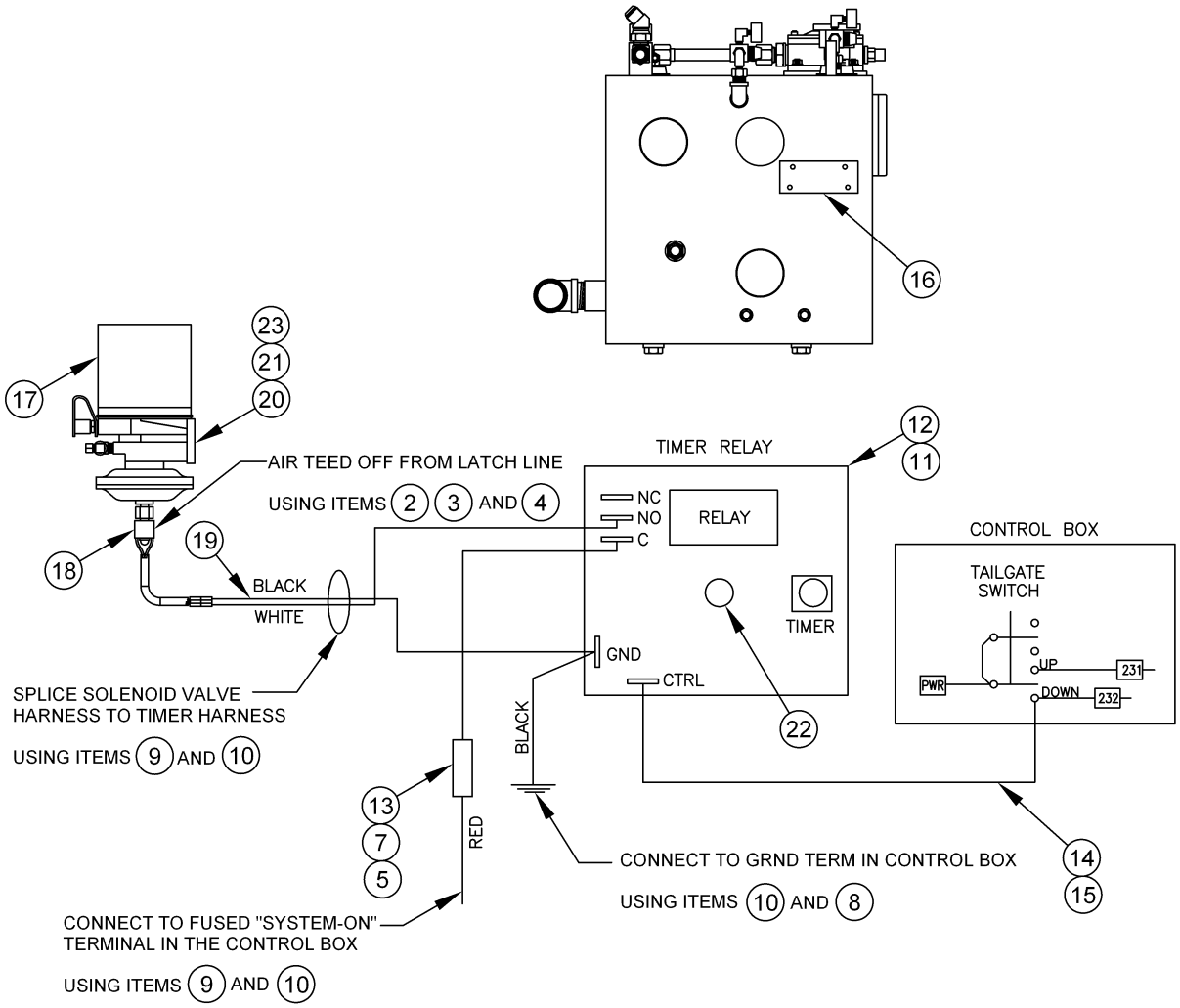
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	272-8331	KIT, Lubrication, Body	-	REF
-1	272-6808-005	PLUG, Meter	-	2
-2	272-6808-011	ELBOW, 5/16” x 1/4” NPT	-	2
-3	272-6808-020	CONNECTOR, 3/16” T x 1/8” NPT	-	2
-4	272-6808-022	ELBOW, Male, 3/16” T x 1/8” NPT	-	4
-5	272-6808-023	TUBING, 5/16” Dia. x 760”	-	40'
-6	272-8330-002	ELBOW, Swivel, 1/4"	-	6
-7	272-8330-004	TUBING, Line, 3/16"	-	40'
-8	272-8331-003	MANIFOLD, 8 Port	-	1
-9	272-8331-004	METER, #4	-	8
-10	272-8331-005	METER, #8	-	4
-11	272-8331-007	ELBOW, Swivel, 1/4" NPT	-	4
-12	272-8331-008	CONNECTOR, Str., 1/8” NPT-5/16” Air	-	12
-13	272-8331-009	FITTING, Lubriquip, 5/16” Air Line x 1/8” NPT	-	5

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GREASE JOCKEY PUMP INSTALLATION

372-1645



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GREASE JOCKEY PUMP INSTALLATION

372-1645

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-1645	INSTALLATION, Pump, Grease Jockey	-	REF
-1	036-1640-208	TIE, Wire, 7-1/25”, #50	-	15
2	054-5449	TUBING, Air Line, 1/4", Nylon	-	5'
3	054-8470-002	ELBOW, Air Line Connection, 1/4” NPT-1/8”	-	1
4	054-8472-002	TEE, Air Line, 1/4"	-	1
5	108-0647	HOLDER, Fuse, In-Line	-	1
-6	108-1110-002	CONNECTOR, Butt, 14-16 Ga.	-	7
7	108-2559-009	FUSE, 5 Amp., 1-1/4”	-	1
8	108-5702-006	CONNECTOR, Ring, 18-22 Stud Dia., #8 Screw	-	1
9	108-5703-006	TERMINAL, Spade, 18-22 Stud Dia., #8 Screw	-	2
10	108-5975-002	TUBE, Shrink, Adhesive, Lined	-	1'
11	108-7857	TIMER, Relay, Cube, 0-60 Sec	-	1
12	108-2050	DISCONNECT, Quick, Terminal, w/Heat Shrink, Female	-	5
13	108-5702-008	TERMINAL, Ring, 14-16 Ga., #10 Screw	-	1
14	108-5034-001	LOOM, Electrical, Split Convoluted, Plastic, 1/4”	-	40'
15	108-5233-011	WIRE, Orange, 16 Ga.	-	40'
16	211-8352	BRACKET, Pump Mounting, 50"	-	1
17	272-6808-003	ASSEMBLY, Pump	-	1
18	272-6808-006	VALVE, Solenoid	-	1
19	272-6808-015	HARNESS, Solenoid, Wiring	-	1
20	FSP070824	HHCS, 5/16” x 1-1/2”, Gr. 5, Plated	-	4
21	FSP230800	NUT, Lock, 5/16”-18, Gr. 5, Plated	-	4
22	047-2151-011	SCREW, Tek, 1/4”-14 x 1”	-	1
23	FSP510800	WASHER, Flat, Std., Plain, 5/16"	-	8

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MANUAL LUBRICATION ZERK ONLY

272-8334

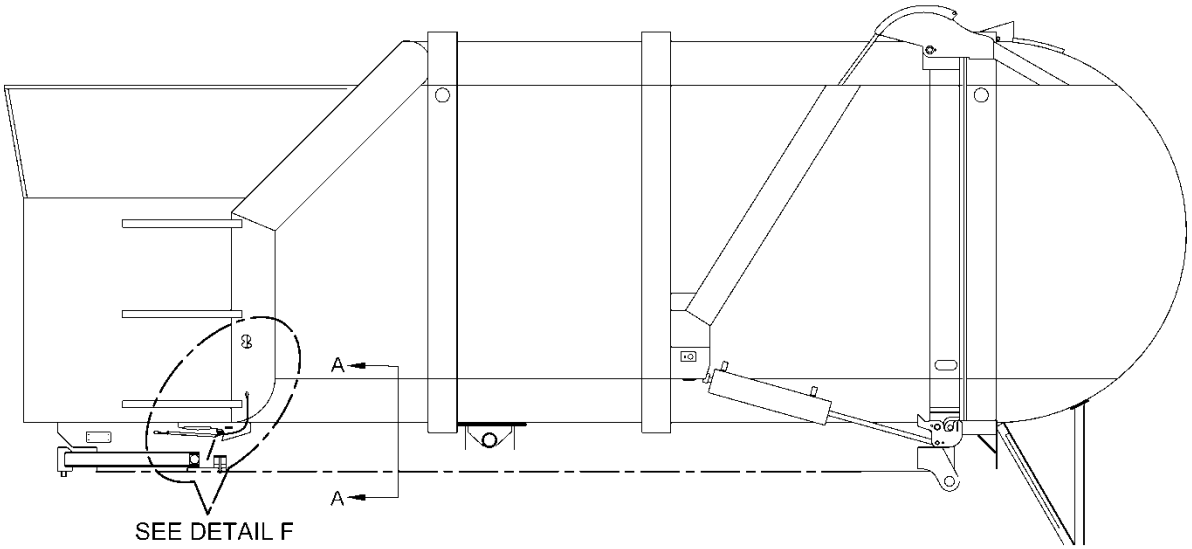
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-	272-8334	LUBRICATION, Manual, Zerk Only	-	REF
-1	059-0205	INSTALLATION, Lubrication, Upper Bearing (See Pg. 7037)	-	1
-2	230-0048	CAP, Zerk	-	7
-3	FS190400	FITTING, Grease, Str., 1/8” NPT	-	7
-4	FS190790	FITTING, Grease, 90°, 1/4"-28	-	2

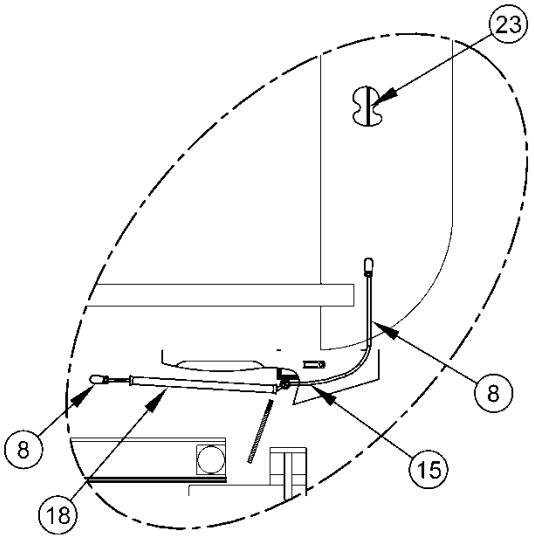
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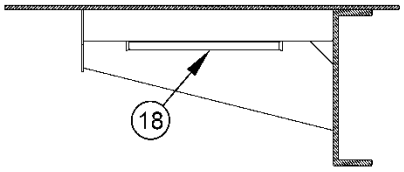
10 POINT AUTO LUBRICATION KIT

272-8337





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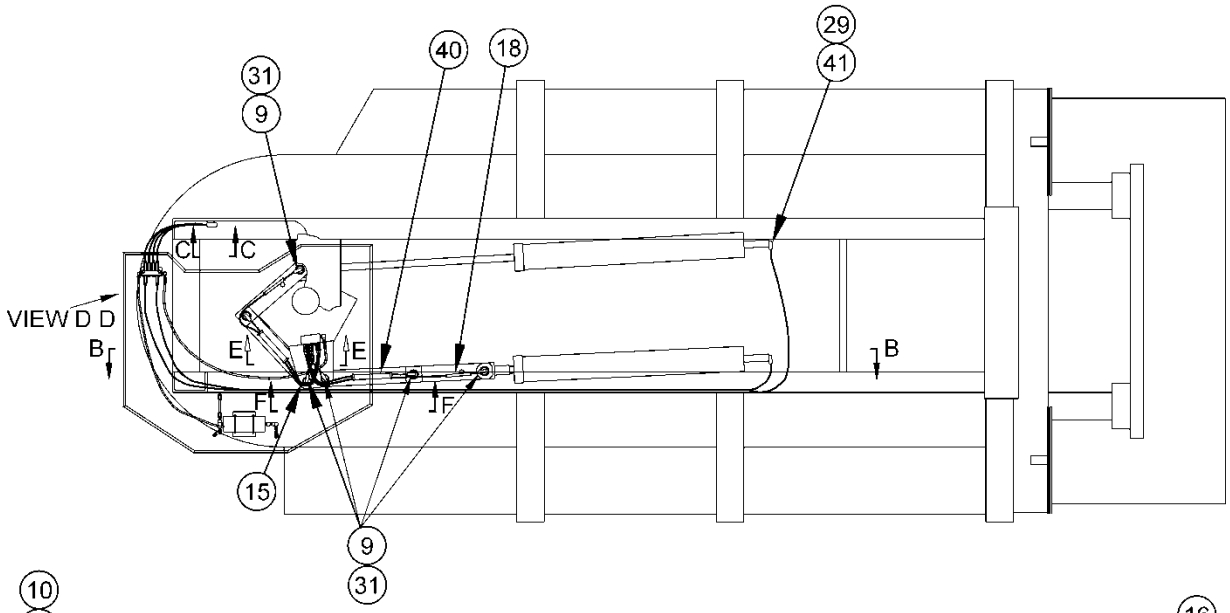
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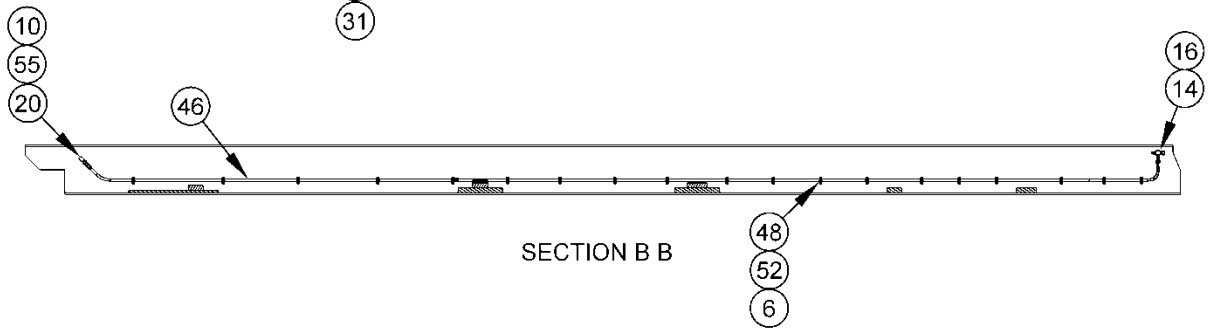
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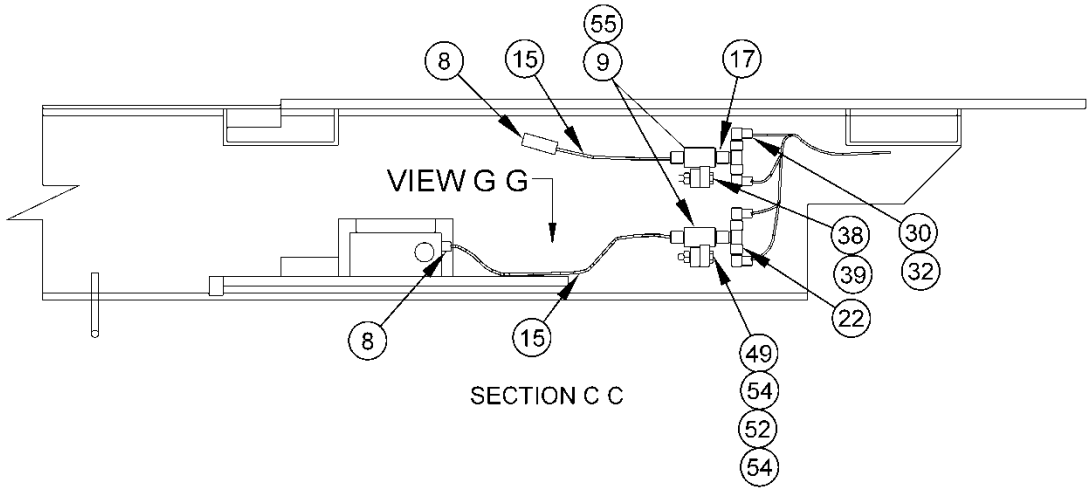
10 POINT AUTO LUBRICATION KIT

272-8337





SECTION B B



SECTION C C

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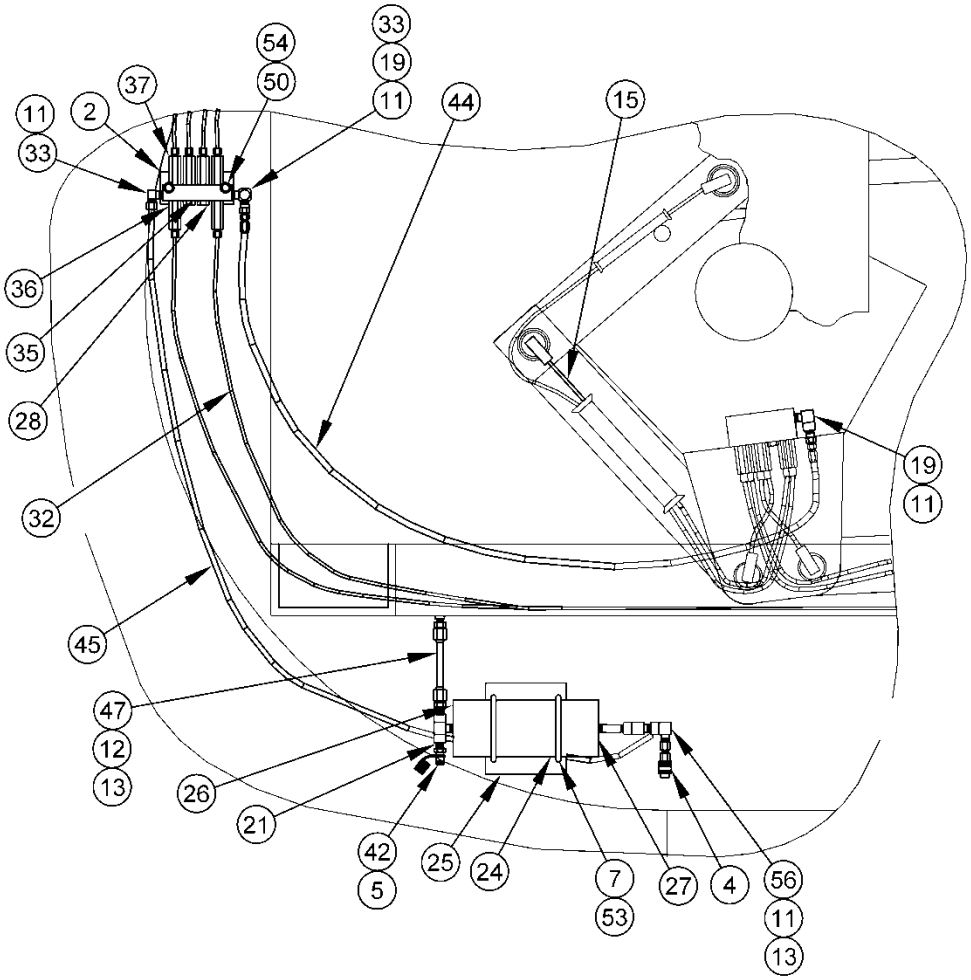
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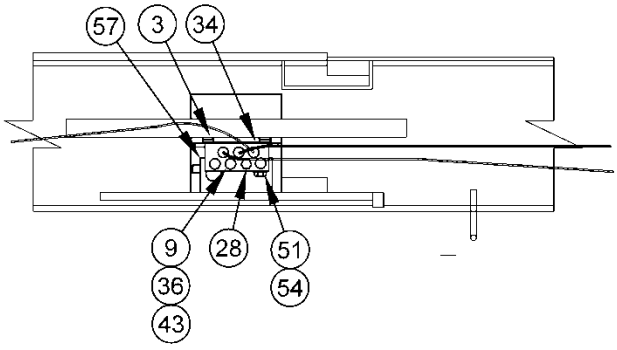
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10 POINT AUTO LUBRICATION KIT

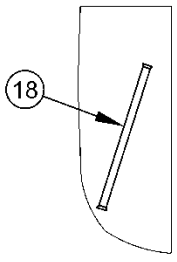
272-8337



SECTION D D



SECTION E E



SECTION G G

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10 POINT AUTO LUBRICATION KIT

272-8337

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	272-8337	KIT, Lubrication, Auto, 10 Point	-	REF
-1	272-8360	KIT, Lubrication, Body (See Pg. 7069)	-	1
2	021-3755	BAR, Weld, 1/2” x 1” HR Bar	-	2
3	021-3756	BAR, Weld, 1/2” x 1” HR Bar	-	2
4	031-5601-002	DISCONNECT, Quick, Female, 1/4" (See Pg. 7071)	-	1
5	031-5601-003	DISCONNECT, Quick, Male, 1/4" NPT w/Dustcap (See Pg. 7071)	-	1
6	036-1122-010	CLAMPS, Wire, Tube, 5/8”-27/32”	-	20
7	036-1647	U-Bolt, 3-1/2"	-	2
8	272-8331-009	FITTING, Lubriquip, 5/16” Air Line x 1/8” NPT	-	4
9	272-8331-008	CONNECTOR, Str., 1/8” NPT-5/16” Air	-	14
10	054-3526-003	CONNECTOR, 7/16”-20 Male JIC x 1/8” Male NPT	-	1
11	054-3526-004	CONNECTOR, 7/16”-20 Male JIC x 1/4” Male NPT	-	4
12	054-3526-007	CONNECTOR, 9/16”-18 Male JIC x 1/8” Male NPT	-	1
13	054-3526-008	CONNECTOR, 9/16”-18 Male JIC x 1/4” Male NPT	-	1
14	054-3624-006	TEE, Run, Female, Swivel, 37° Flare, 1/2"-3/4”-16	-	1
15	272-6808-023	TUBING, 5/16” Dia. x 760”	-	25'
16	054-6547-002	REDUCER, 1/2" to 1/4" JIC	-	1
17	054-8927-001	NIPPLE, Hex, 1/4”-1/8”, Brass	-	2
18	054-8944-008	TUBING, Steel, Flared, 8”	-	5
19	054-9019-002	ELBOW, 90°, Male NPT-Female NPT, 1/4"-1/4”	-	2
20	054-9019-003	ELBOW, 90°, Male NPT-Female NPT, 1/8"-1/8”	-	1
21	054-9160-003	TEE, Run, Male, 1/4" NPT	-	1
22	054-9715-001	FITTING, Tee, Steel, 1/8” NPT	-	2
23	059-0205	INSTALLATION, Lubrication, Upper Bearing (See Pg. 7037)	-	1
24	059-0221	PUMP, Auto Lubrication	-	1
25	311-2419	BRACKET, Cannister, Lubrication, 7 Ga.	-	1
26	212-1847	DECAL, “Use 000 Grease”	-	1
27	212-1892	DECAL, “Tank Connection”	-	1
28	272-6808-005	PLUG, Meter	-	REF
29	272-6808-020	CONNECTOR, 3/16” T x 1/8” NPT	-	REF
30	272-6808-022	ELBOW, Male, 3/16” T x 1/8” NPT	-	REF
31	272-8330-002	ELBOW, Swivel, 1/4"	-	REF
32	272-8330-004	TUBING, Line, 3/16"	-	REF
33	272-8331-001	ELBOW, Swivel, 1/4" NPT	-	REF
34	272-8331-002	MANIFLOD, 7 Port	-	REF
35	272-8331-003	MANIFOLD, 8 Port	-	REF
36	272-8331-004	METER, #4	-	REF
37	272-8331-005	METER, #8	-	REF
38	311-0169	BRACKET, 1/4" x 1” HR Bar	-	2
39	311-0177	BRACKET, 1/4" x 1” HR Bar	-	2
40	354-0059-010	TUBING, Steel, Flared, 10”, 0.875” x 0.065” Wall SAE	-	2
41	354-0084	ELBOW, 1/4"-28 M to 1/8” F NPT	-	2
42	354-0440-001	TEE, Pipe, Male/Female, 1/4"-18	-	1
43	354-0508	CONNECTOR, Female, 1/8”-27 NPT Thd., 1/2"-24 Thd.	-	6
44	QC1-FCFC-044	ASSEMBLY, Hose, 1/4”, 37° JIC Female Swivel, Pipe, 44"	-	1
45	QC1-FCFC-047	ASSEMBLY, Hose, 1/4”, 37° JIC Female Swivel, Pipe, 47"	-	1
46	QC1-FCFC-XXX	ASSEMBLY, Hose, 1/4”, 37° JIC Female Swivel, Pipe	-	1
47	TAS-B003-500	TUBE, 3/8"	-	1
48	FS070711	HHCS, 1/4"-20 x 1/2", Gr. 5	-	20
49	FS070720	HHCS, 1/4”-20 x 1’’, Gr. 5	-	2
50	FS070723	HHCS, 1/4"-20 x 1-3/8”, Gr. 5	-	2

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10 POINT AUTO LUBRICATION KIT

272-8337

ITEM	PART NO.	DESCRIPTION	EFF	QTY
51	FS070730	HHCS, 1/4”-20 x 2”, Gr. 5	-	2
52	FS220700	NUT, Lock, 1/4"	-	22
53	FS220900	NUT, Special, 3/8”-16	-	4
54	FS520700	WASHER, Flat, 1/4" SAE, Plain	-	8
55	FS640400	COUPLING, Black Pipe, Std., 1/8” NPT	-	3
56	FS880700	NIPPLE, Black, Std., 1/4" NPT	-	1
57	FS900700	PLUG, Pipe, Iron, 1/4"	-	2

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BODY LUBRICATION KIT

272-8360

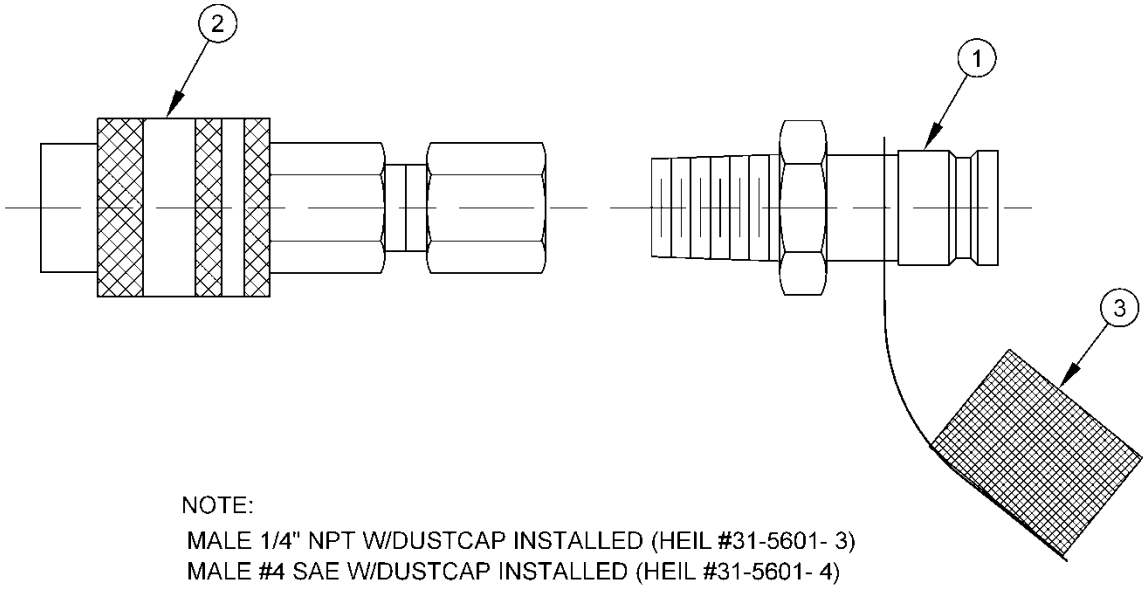
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	272-8360	KIT, Lubrication, Body	-	REF
-1	272-6808-005	PLUG, Meter	-	3
-2	272-6808-020	CONNECTOR, 3/16” T x 1/8” NPT	-	2
-3	272-6808-022	ELBOW, Male, 3/16” T x 1/8” NPT	-	4
-4	272-8330-002	ELBOW, Swivel, 1/4"	-	6
-5	272-8330-004	TUBING, Line, 3/16"	-	60'
-6	272-8331-001	ELBOW, Swivel, 1/4" NPT	-	3
-7	272-8331-002	MANIFLOD, 7 Port	-	1
-8	272-8331-003	MANIFOLD, 8 Port	-	1
-9	272-8331-004	METER, #4	-	8
-10	272-8331-005	METER, #8	-	4

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QUICK DISCONNECT

031-5601



NOTE:
MALE 1/4" NPT W/DUSTCAP INSTALLED (HEIL #31-5601- 3)
MALE #4 SAE W/DUSTCAP INSTALLED (HEIL #31-5601- 4)
MALE #6 SAE W/DUSTCAP INSTALLED (HEIL #31-5601- 5)

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QUICK DISCONNECT
031-5601

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	031-5601	DISCONNECT, Quick	-	REF
1	031-5601-003	DISCONNECT, Quick, Male, 1/4" NPT	-	1
2	031-5601-004	DISCONNECT, Quick, Male, SAE, #4	-	1
3	031-5601-005	DUST CAP	-	1

AUTO LOADER MANUAL PACKER LUBRICATION KIT
372-0916

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-0916	KIT, Lubrication, Manual Packer, Auto Loader	-	REF
-1	272-8223	ASSEMBLY, Loader, Lubrication Kit (See Pg. 7045)	-	1
-2	272-8335	SYSTEM, Lubrication, Standard (See Pg. 7035)	-	1
-3	372-1645	INSTALLATION, Pump, Grease Jockey (See Pg. 7057)	-	1

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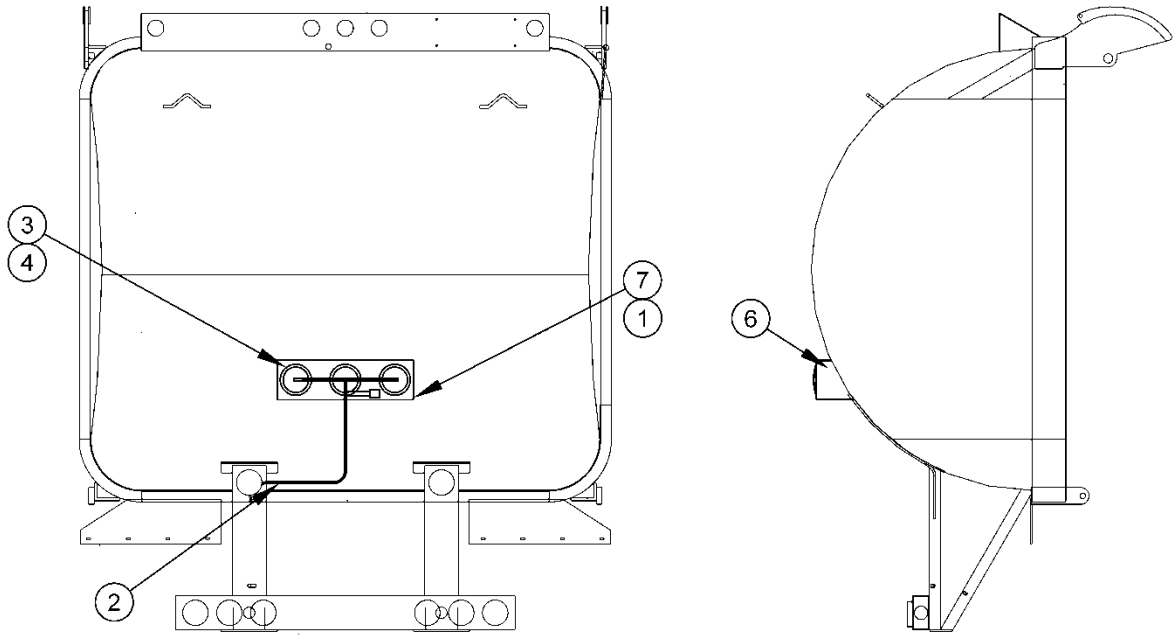
LIGHTING KITS

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FLASHING STOP SIGNAL

272-7286



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FLASHING STOP SIGNAL

272-7286

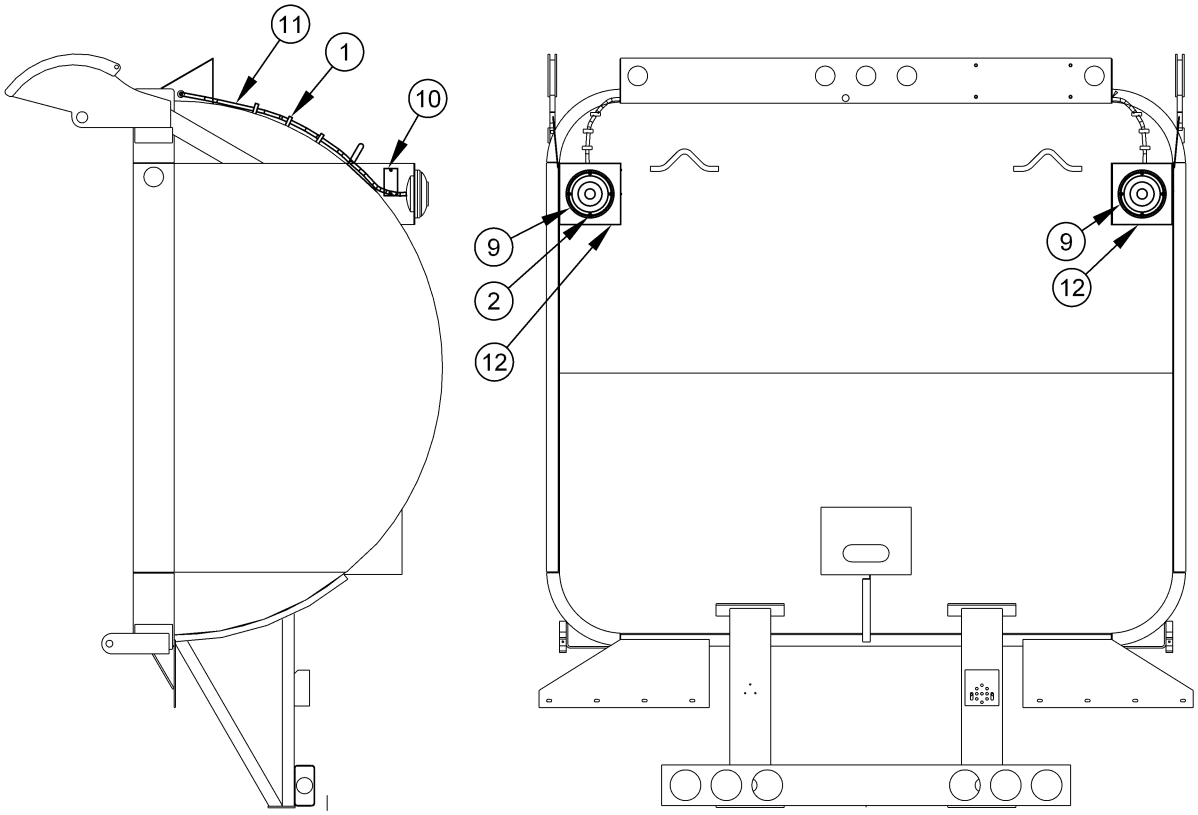
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	272-7286	SIGNAL, Stop, Flashing	-	REF
1	036-1249	CLAMP, Wire Loom	-	10
2	108-6186	HARNESS, Light, Brake (See SM 10)	-	1
3	115-0937	LIGHT, Turn, Amber, 4” Dia.	-	3
4	115-0742-002	GROMMET, Mount	-	3
-5	NA	-	-	-
6	115-1255-001	FLASHER, 3 Terminal, 25 Amp, 60-120 Flashes	-	1
7	177-3810	BRACKET, Light, Stop, 12 Ga.	-	1

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SS AND CS MUNICIPAL 7" FLASHER KIT

272-8842-001, 272-8842-002



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SS AND CS MUNICIPAL 7" FLASHER KIT

272-8842-001, 272-8842-002

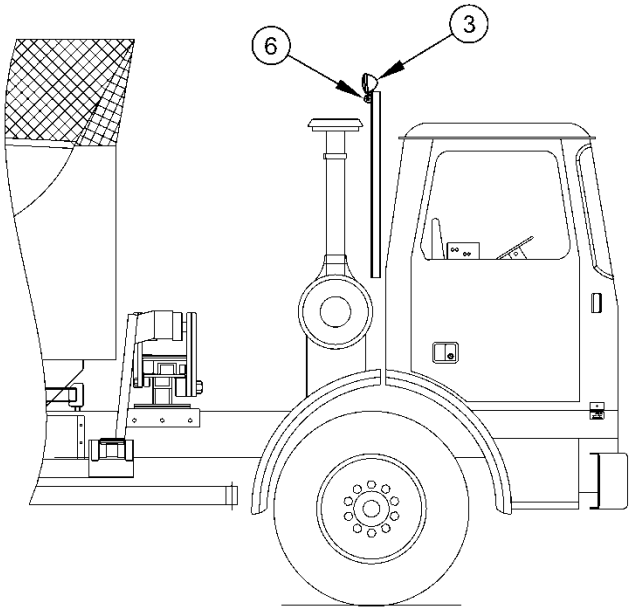
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	272-8842-001	KIT, Flasher, 7", Municipal, SS	A	REF
-	272-8842-002	KIT, Flasher, 7", Municipal, CS	B	REF
1	036-1580-009	CLAMP, “J”, 5/8”	-	6
2	047-2309	INSERT, Aluminum, 10/32" Thd.	-	8
-3	108-0647	HOLDER, Fuse, In-Line	-	1
-4	108-1110-002	CONNECTOR, Butt, 14-16 Ga.	-	5
-5	108-2050	DISCONNECT, Quick, Terminal, w/Heat Shrink, Female	-	2
-6	108-2559-002	FUSE, 6 Amp., 3/4"	-	1
-7	108-5702-011	TERMINAL, Ring	-	3
-8	108-6815	SWITCH, Toggle	-	1
9	115-0892	LIGHT, Warning, 7"	-	2
10	115-0924	FLASHER, Heat Shrink, 3/16” Dia.	-	1
11	263-0655	HARNESS, Flasher (See SM 10)	-	1
12	311-0400	BRACKET, Light, 7”	A	2
-13	311-0726-001	BRACKET, Light, 7”, 2.8 Yd. Tailgate, 12 Ga.	B	2

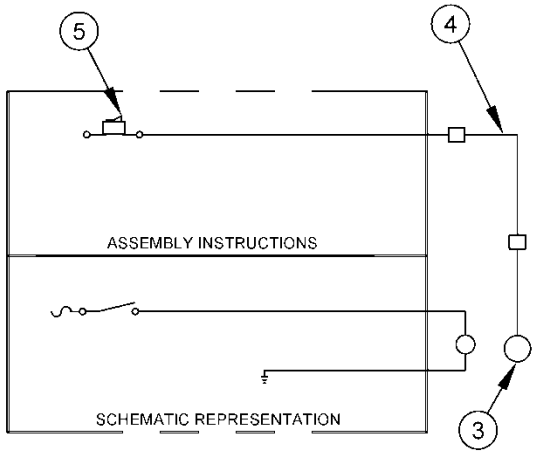
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HOPPER WORK LIGHT KIT
372-1457





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HONOLULU STROBE LIGHT KIT
272-6708

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	272-6708	KIT, Strobe Light, Honolulu	-	REF
-1	-	NA	-	-
-2	115-0933	LIGHT, Strobe, Whelen, 1” NPT Thd.-3/4”	-	1

HOPPER WORK LIGHT KIT
372-1457

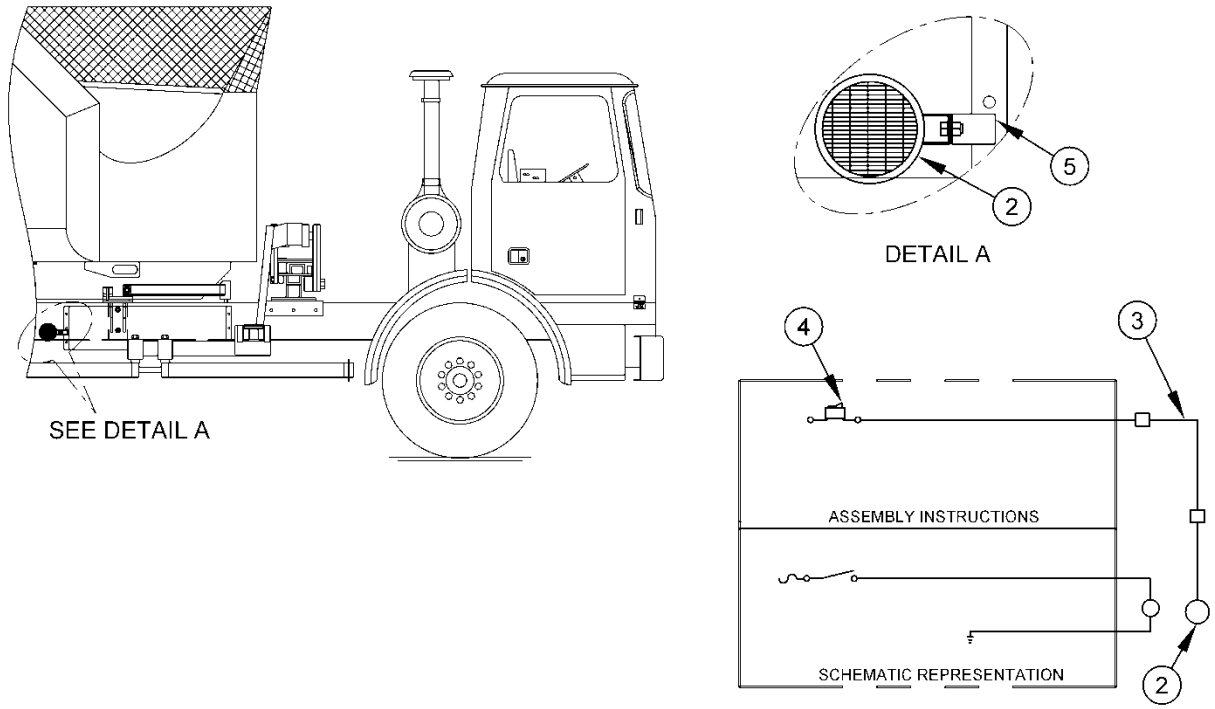
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-1457	KIT, Work Light, Hopper	-	REF
-1	036-1249	CLAMP, Wire Loom	-	6
-2	036-1640-208	TIE, Wire, 7-1/25”, #50	-	20
3	115-1226	ASSEMBLY, Work Light, w/Connector (See SM 7)	-	1
4	263-1514	HARNESS, Work Light, Hopper	-	1
5	108-7760	SWITCH, Rocker Type, SPST	-	1
6	211-9082	BRACKET, Mtg., Work Light, 1/4" x 2” x 2” HR Angle	-	1

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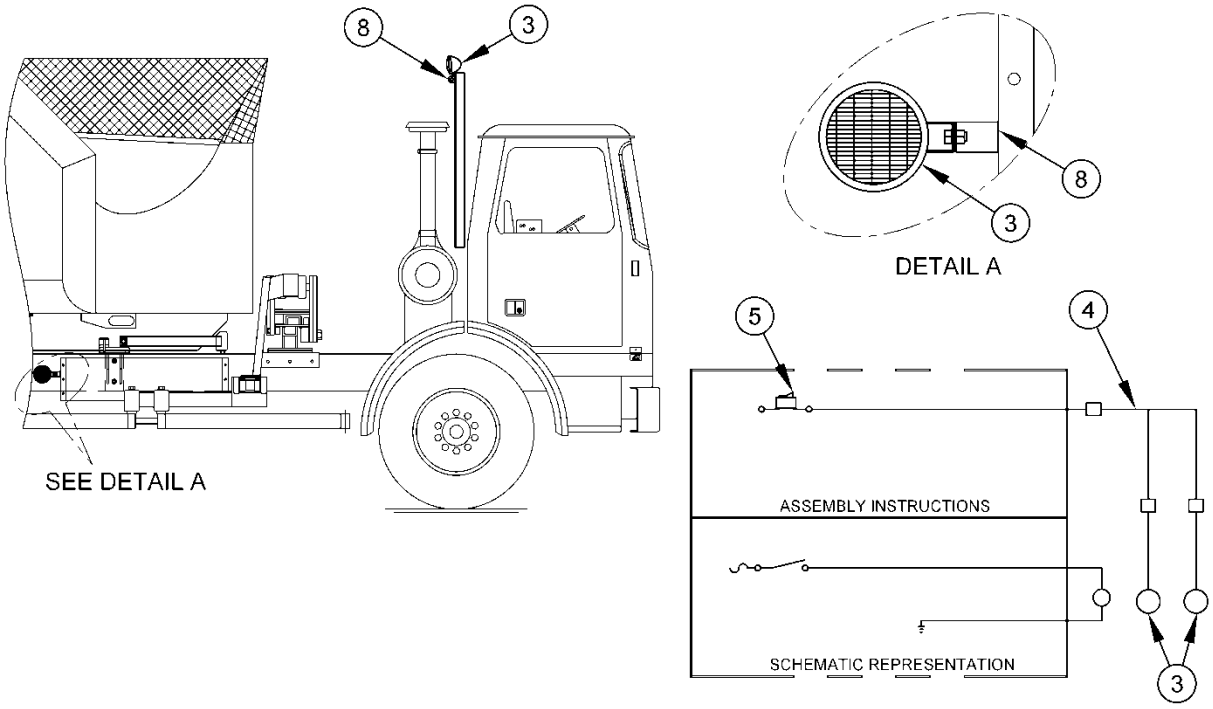
GRABBER WORK LIGHT KIT

372-1457-001



HOPPER/GRABBER WORK LIGHT KIT

560-0012



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GRABBER WORK LIGHT KIT

372-1457-001

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-1457-001	KIT, Work Light, Grabber	-	REF
-1	036-1640-208	TIE, Wire, 7-1/25", #50	-	10
2	115-1226	ASSEMBLY, Work Light, w/Connector (See SM 7)	-	1
3	263-1513	HARNESS, Work Light, Grabber	-	1
4	108-7760	SWITCH, Rocker Type, SPST	-	1
5	311-2817	BRACKET, Work Light, Grabber, 12 Ga.	-	1

HOPPER/GRABBER WORK LIGHT KIT

560-0012

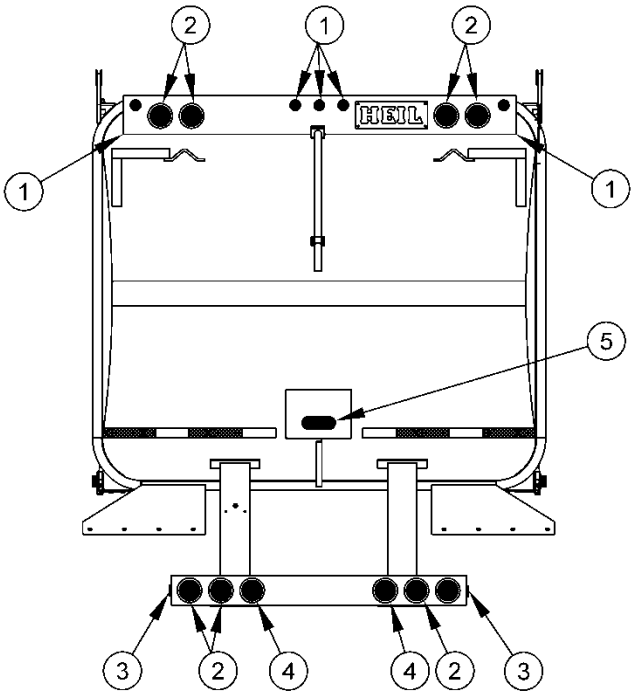
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	560-0012	KIT, Work Light, Hopper/Grabber	-	REF
-1	036-1249	CLAMP, Wire Loom	-	6
-2	036-1640-208	TIE, Wire, 7-1/25", #50	-	10
3	115-1400	LIGHT, LED, Flood (See SM 7)	-	2
4	263-1515	HARNESS, Work Light, Grabber/Hopper (See SM 10)	-	1
5	108-7760	SWITCH, Rocker Type, SPST	-	1
-6	NA	-	-	-
-7	212-1580-008	DECAL, Flood Light, Hopper	-	1
8	311-2817	BRACKET, Work Light, Grabber, 12 Ga.	-	2

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TAILGATE LED LIGHT KIT
372-1886



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LED LIGHT SWAP KIT
272-8629

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	272-8629	KIT, Swap, LED Light	-	REF
-1	-	NA	-	-
-2	115-1046-001	LIGHT, LED, Amber, 2-1/2" (See SM 7)	-	6
-3	-	NA	-	-
-4	115-1045-001	LIGHT, LED, Clearance, Red, 2-1/2" (See SM 7)	-	7
-5	-	NA	-	-
-6	115-1227-001	LIGHT, LED, STT, Red, 4"	-	8
-7	115-1035-002	PLUG, Adapter	-	10
-8	-	NA	-	-
-9	115-0945-001	LIGHT, LED, Clearance, Red, 2"	-	2
-10	115-1038-001	LED, Turn, Mid Body, Lamp	-	2
-11	115-1039-001	LED, Stop, Red Lamp, Oval	-	1

TAILGATE LED LIGHT KIT
372-1886

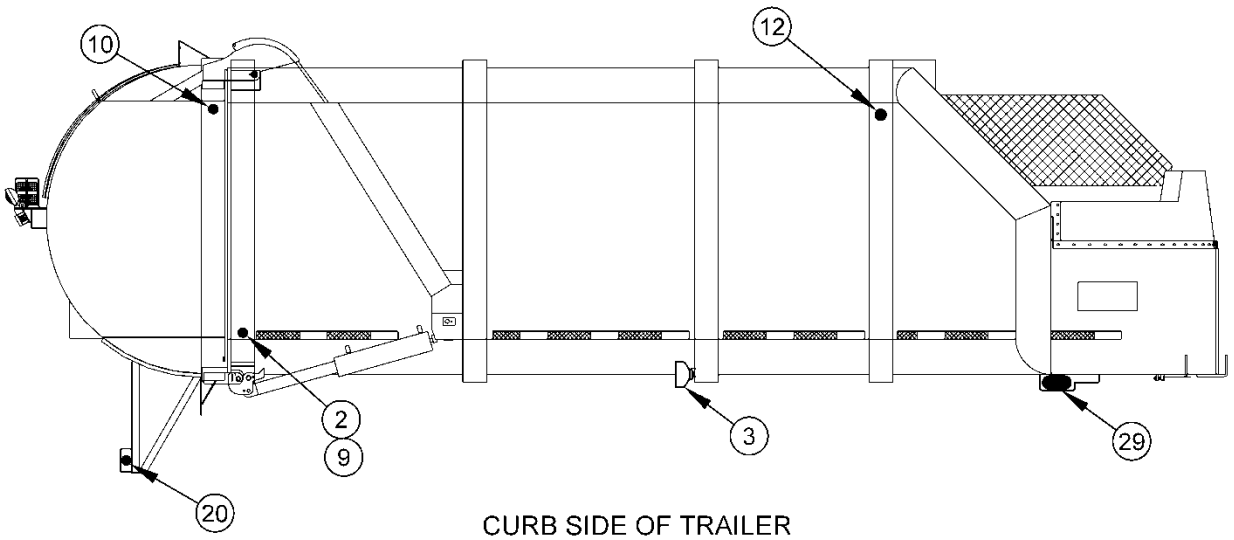
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-1886	KIT, Light, LED, Tailgate	-	REF
1	115-1362	ASSEMBLY, Light, LED, Clearance, Red, 2-1/2” (See SM 7)	-	7
2	115-1360	ASSEMBLY, LED, STT, Red, Rd., 4" (See SM 7)	-	8
3	115-1376	LIGHT, LED, Clearance, Red, 2"	-	2
4	115-1361	LAMP, LED, Reverse, 4" (See SM 7)	-	2
5	115-1364	ASSEMBLY, Light, LED, Stop, Oval, Red (See SM 7)	-	1
-6	NA	-	-	-

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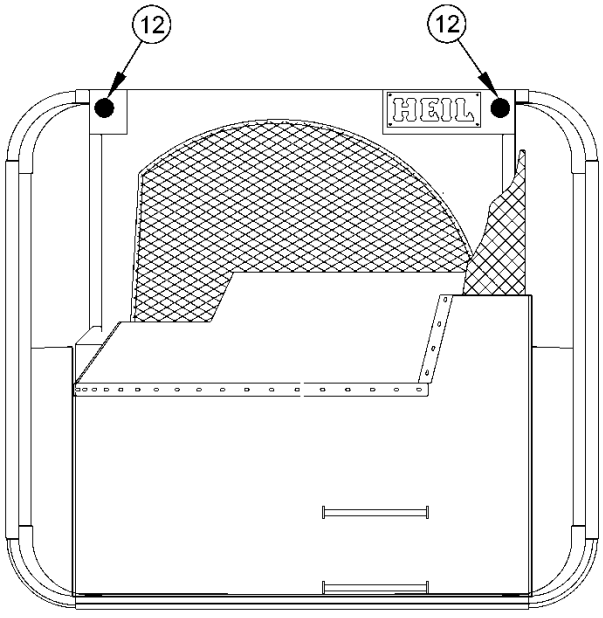
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BFI ALLIED SAFETY/VIS KIT

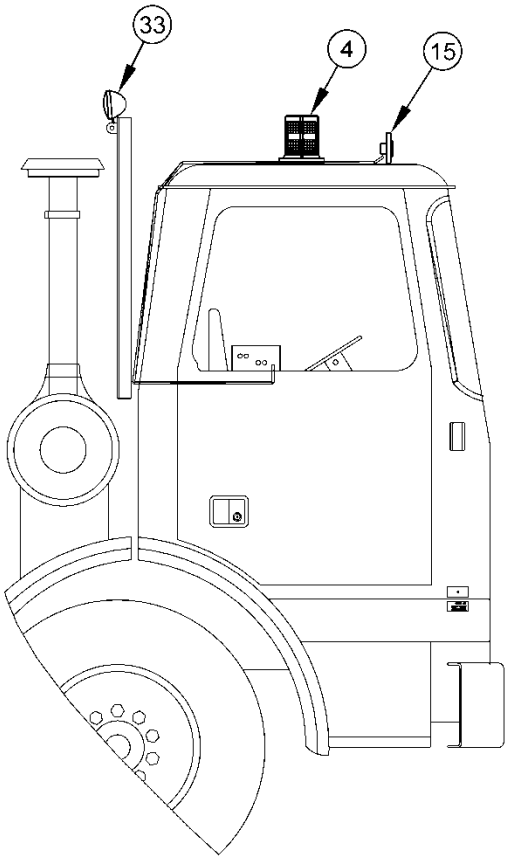
372-1171



CURB SIDE OF TRAILER



FRONT VIEW OF TRAILER



SIDE VIEW OF CAB

SHEET 1OF 2

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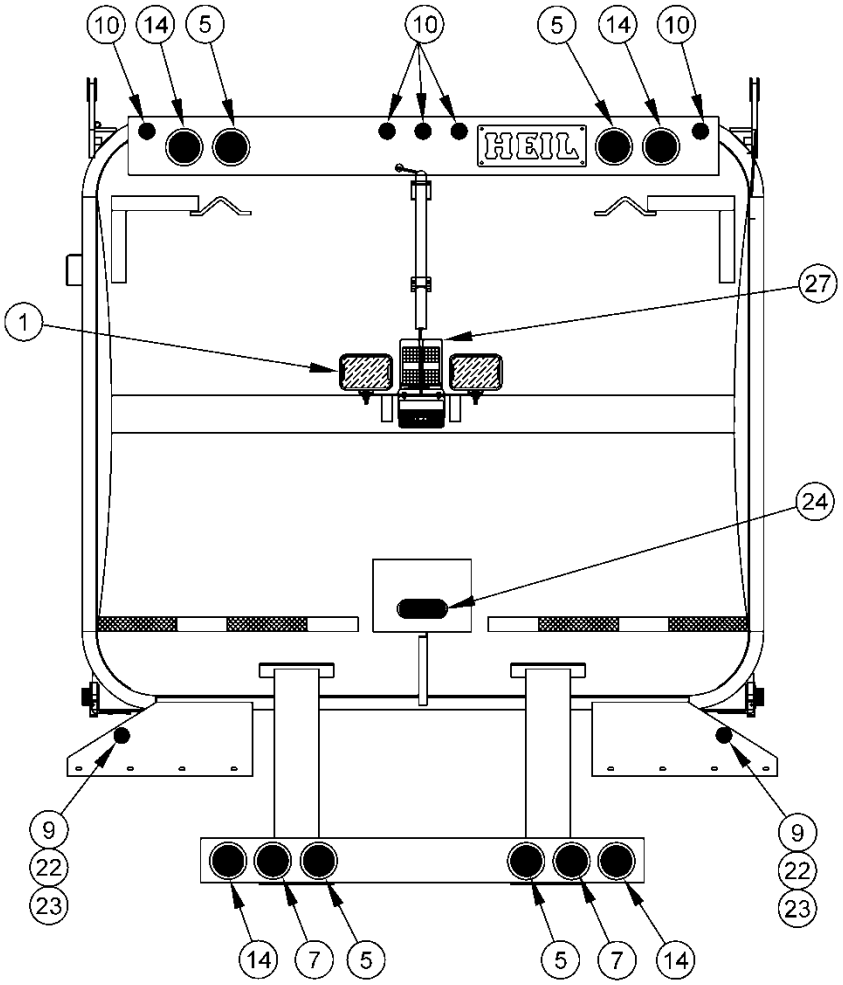
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BFI ALLIED SAFETY/VISIBILITY KIT

372-1171



REAR VIEW OF TRAILER

SHEET 2 OF 2

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BFI ALLIED SAFETY/VISIBILITY KIT

372-1171

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-1171	KIT, Safety/Visibility, Allied, BFI	-	REF
1	372-1400	LIGHT, Work, Halogen, Drop/Add (See Pg. 7089)	-	1
2	047-2151-006	SCREW, Tek, #10-16 x 3/4"	-	2
3	372-1065-001	KIT, Lamps, Flood, Side (See Pg. 7091)	-	1
4	372-0867-005	LIGHT, Strobe, Cab Mounted, 360°, Allied (See Pg. 7095)	-	1
5	115-1360	ASSEMBLY, LED, STT, Red, Rd., 4" (See SM 7)	-	4
-6	-	NA	-	-
7	115-1361	LAMP, LED, Reverse, 4" (See SM 7)	-	2
-8	-	NA	-	-
9	115-0757	REFLECTOR, Red, 3-1/4" Dia.	-	4
10	115-1362	ASSEMBLY, Light, LED, Clearance, Red, 2-1/2” (See SM 7)	-	7
-11	-	NA	-	-
12	115-1373	ASSEMBLY, Light, LED, Clearance, Amber, 2-1/2” (See SM 7)	-	4
-13	-	NA	-	-
14	115-1220	LIGHT, Strobe, Bull Eye, LED Amber	-	4
15	372-1993-052	STROBES, Cab Mounted, Mack LE (See Pg. 7099)	-	1
20	115-1376	LIGHT, LED, Clearance, Red, 2"	-	2
-21	-	NA	-	-
22	FS280400	NUT, Hex, 1/8”-24	-	2
23	FS410415	SCREW, Mach, Flat Hd., 1/8” x 3/4"	-	2
24	115-1369	LIGHT, LED, Oval Bracket	-	1
-25	-	NA	-	-
-26	NA	-	-	-
27	272-6673-004	KIT, Strobe Light, w/In Cab Switch and Back-Up (See Pg. 7025)	-	1
-28	-	NA	-	-
29	115-1377	LED, Middle, Body Turn	-	2
-30	NA	-	-	-
-31	372-1457-002	LIGHT, Work, Halogen, Grabber (See Pg. 7283)	-	1
-32	701-8485	BREAKER, Circuit, Configuration, Control Box, BFI	-	REF
33	372-1457-003	KIT, Work Light, Halogen, Hopper	-	1

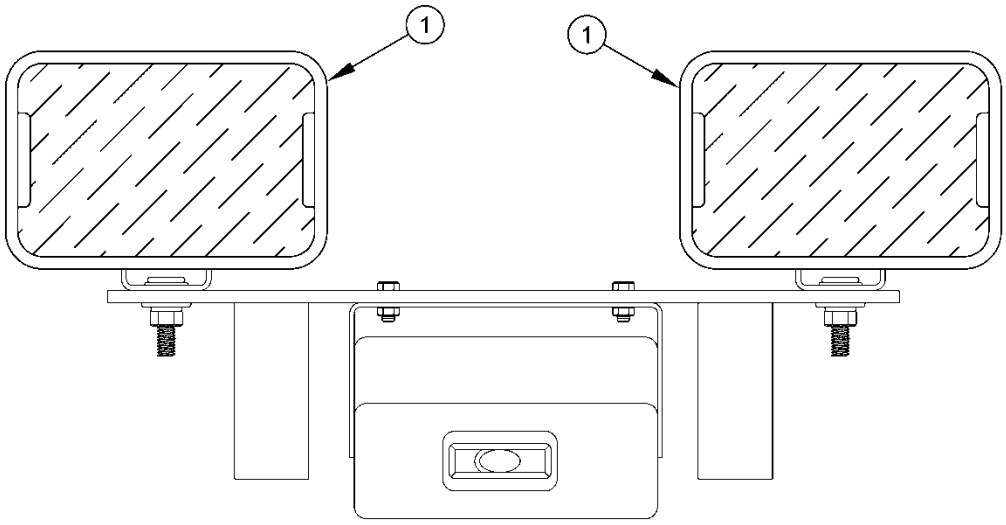
Note: Items 16-19 are not available.

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DROP/ADD HALOGEN WORK LIGHT

372-1400



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DROP/ADD HALOGEN WORK LIGHT

372-1400

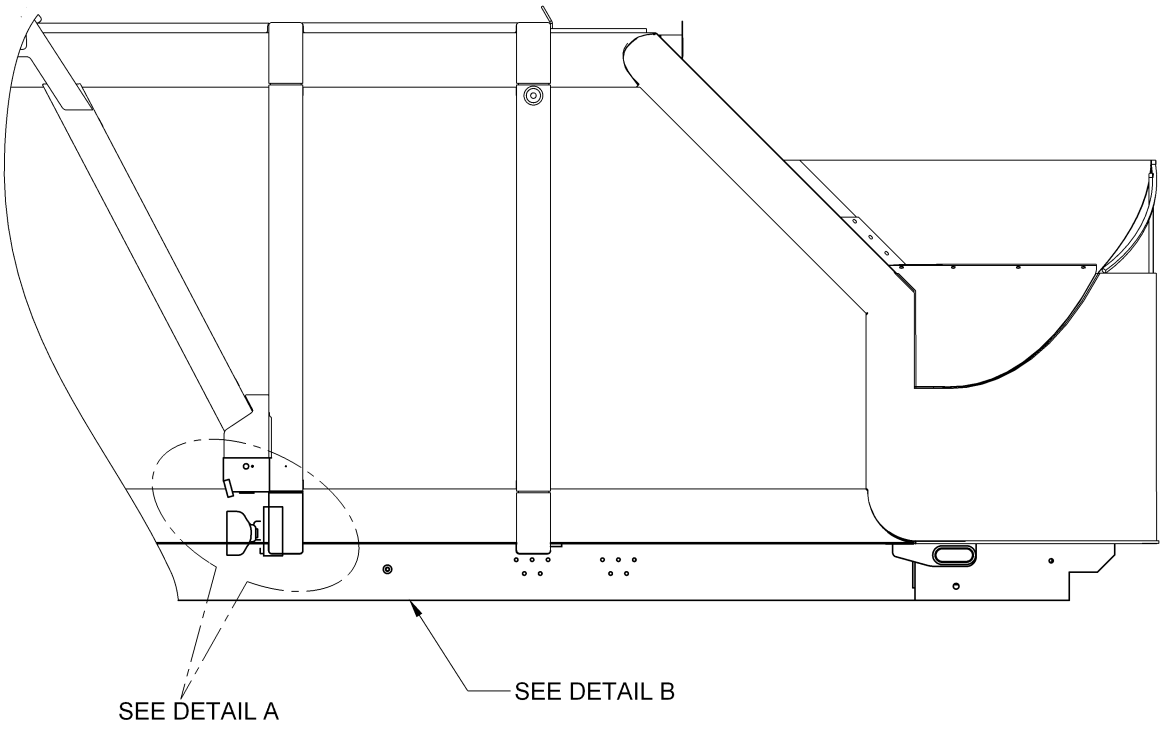
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-1400	LIGHT, Work, Halogen, Drop/Add	-	REF
1	115-0916	LIGHT, Halogen, Trapezoidal Beam	-	2
-2	-	NA	-	-

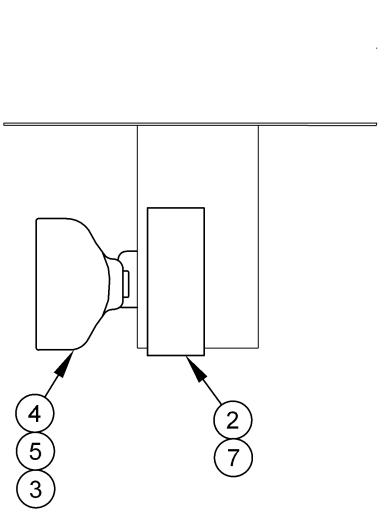
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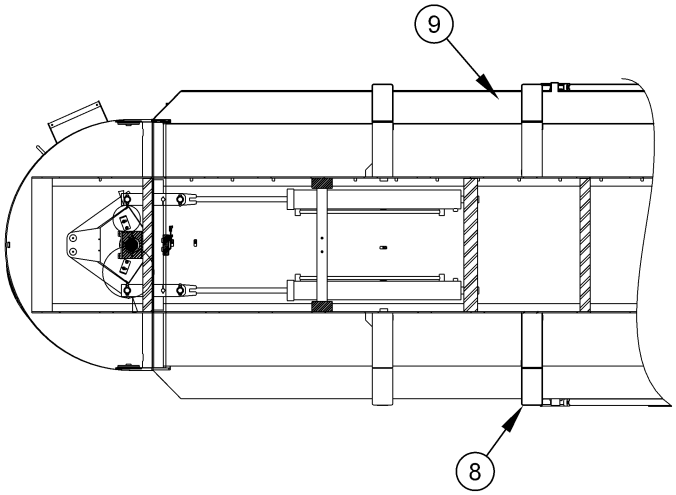
SIDE FLOOD LAMPS KIT

372-1065-001





DETAIL A



DETAIL B

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SIDE FLOOD LAMPS KIT

372-1065-001

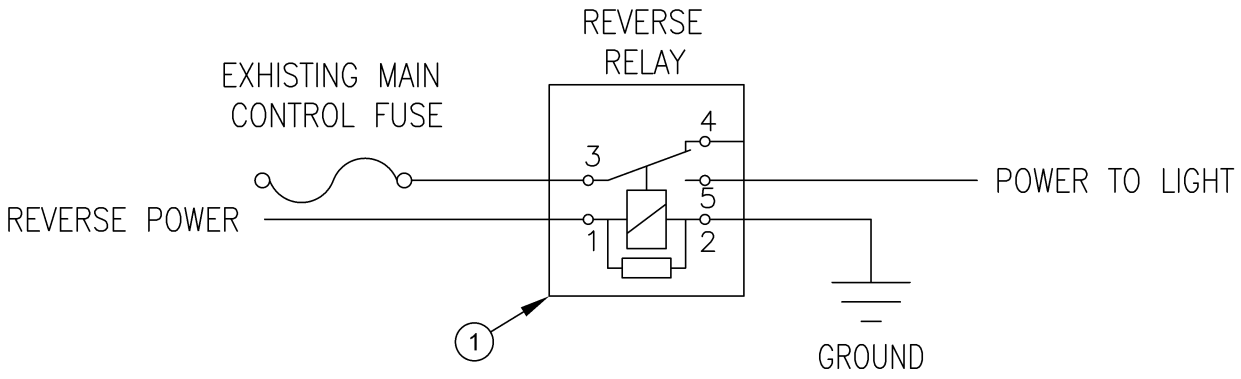
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-1065-001	KIT, Lamps, Flood, Side	-	REF
-1	254-4473-002	KIT, Control, Light, Relay, Reverse Activated (See Pg. 7093)	-	1
2	311-2986	BRACKET, Guard, Flood Lamp, Side, SS, 12 Ga., HRS	-	1
3	108-1493	GROMMET, Rubber	-	2
4	115-1224	ASSEMBLY, Light, Trapezoidal w/Connector (See SM 7)	-	2
5	211-9157	BRACKET	-	2
-6	263-0942	HARNESS, Flood Lamps, Side	-	1
7	311-3006	GUARD, Flood Lamp, Side, CS	-	1
8	137-0312	SUBFRAME, Bolster, CS	-	1
9	137-0313	SUBFRAME, Bolster, SS	-	1
-10	-	NA	-	-

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REVERSE ACTIVATED RELAY LIGHT CONTROL KIT

254-4473-002



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REVERSE ACTIVATED RELAY LIGHT CONTROL KIT

254-4473-002

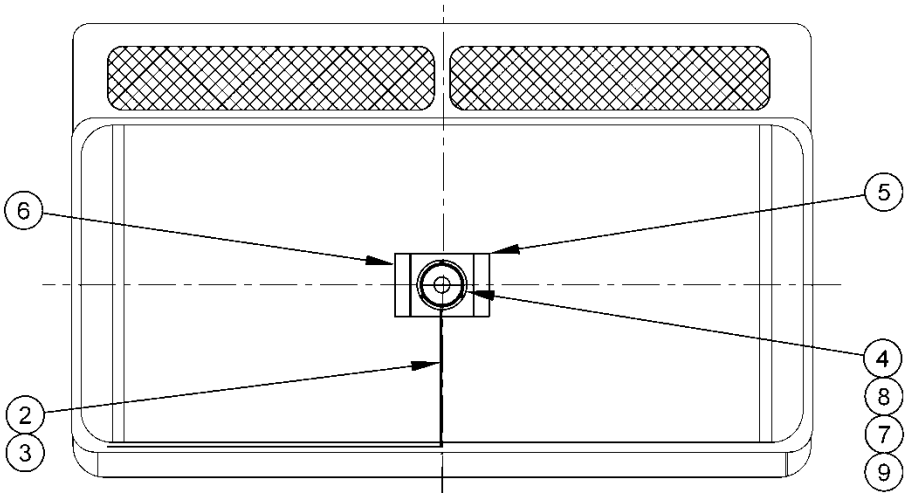
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	254-4473-002	KIT, Control, Light, Relay, Reverse Activated	-	REF
1	069-0032	KIT, Micro Relay (See Section 6)	-	1

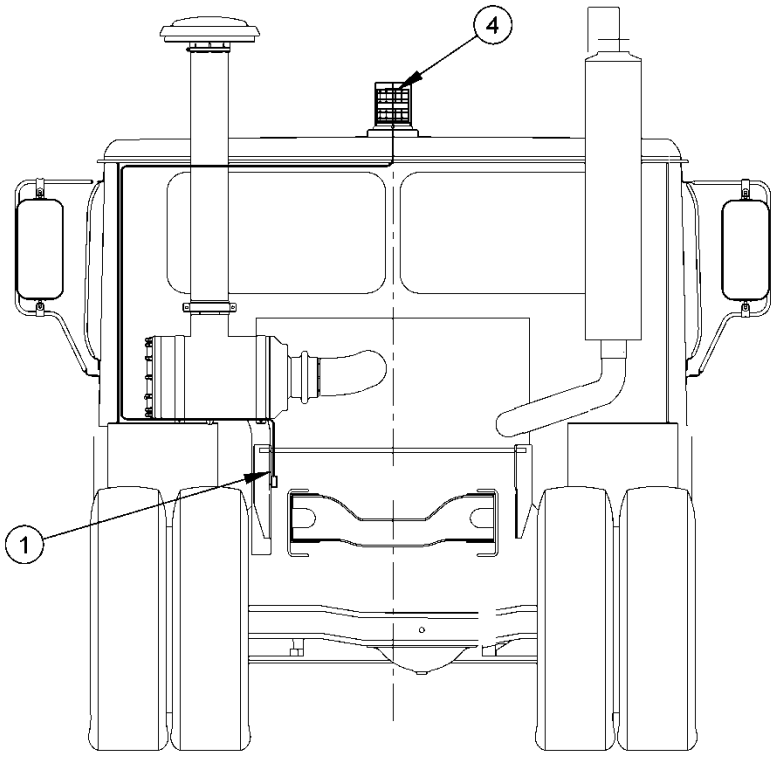
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ALLIED WASTE 360° CAB MOUNTED STROBE

372-0867-005





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ALLIED WASTE 360° CAB MOUNTED STROBE

372-0867-005

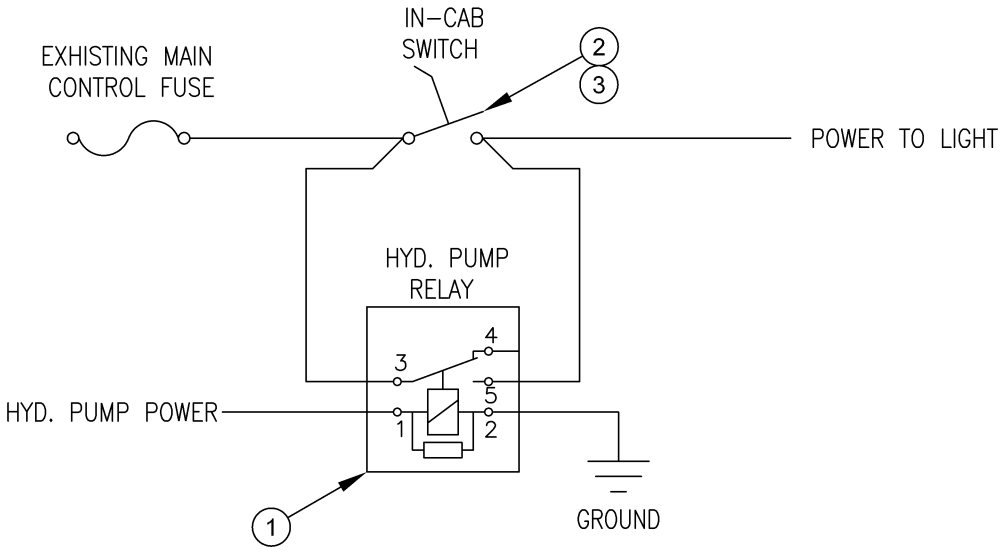
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-0867-005	LIGHT, Strobe, Cab Mounted, 360°, Allied	-	REF
1	254-4473-005	SWITCH, In Cab, Relay, Light Control, Hyd. Pump (See Pg. 7097)	-	1
2	036-1470	MOUNT, Back, Adhesive, 3/4” x 3/4"	-	40
3	036-1581	STRAP, Tie, Harness, 5-1/2”, #50 Limit, Nylon	-	40
4	115-1232	KIT, Strobe Light w/Brush Guard (See SM 7)	-	1
5	274-0308-002	TAPE, Adhesive, Double Sided, 2” W, 0.45” Thickness	-	16"
6	311-2088	BRACKET, Strobe, 360°, Cab Mounted, 14 Ga., HRS	-	2
7	FS270400	NUT, #10-32	-	3
8	FS420421	SCREW, Mach., Rd. Hd., #10-24 x 1-1/8”	-	3
9	FS550400	WASHER, Lock, #10, Plated	-	3

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IN CAB SWITCH/HYDRAULIC PUMP LIGHT RELAY CONTROL

254-4473-005



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IN CAB SWITCH/HYDRAULIC PUMP LIGHT RELAY CONTROL

254-4473-005

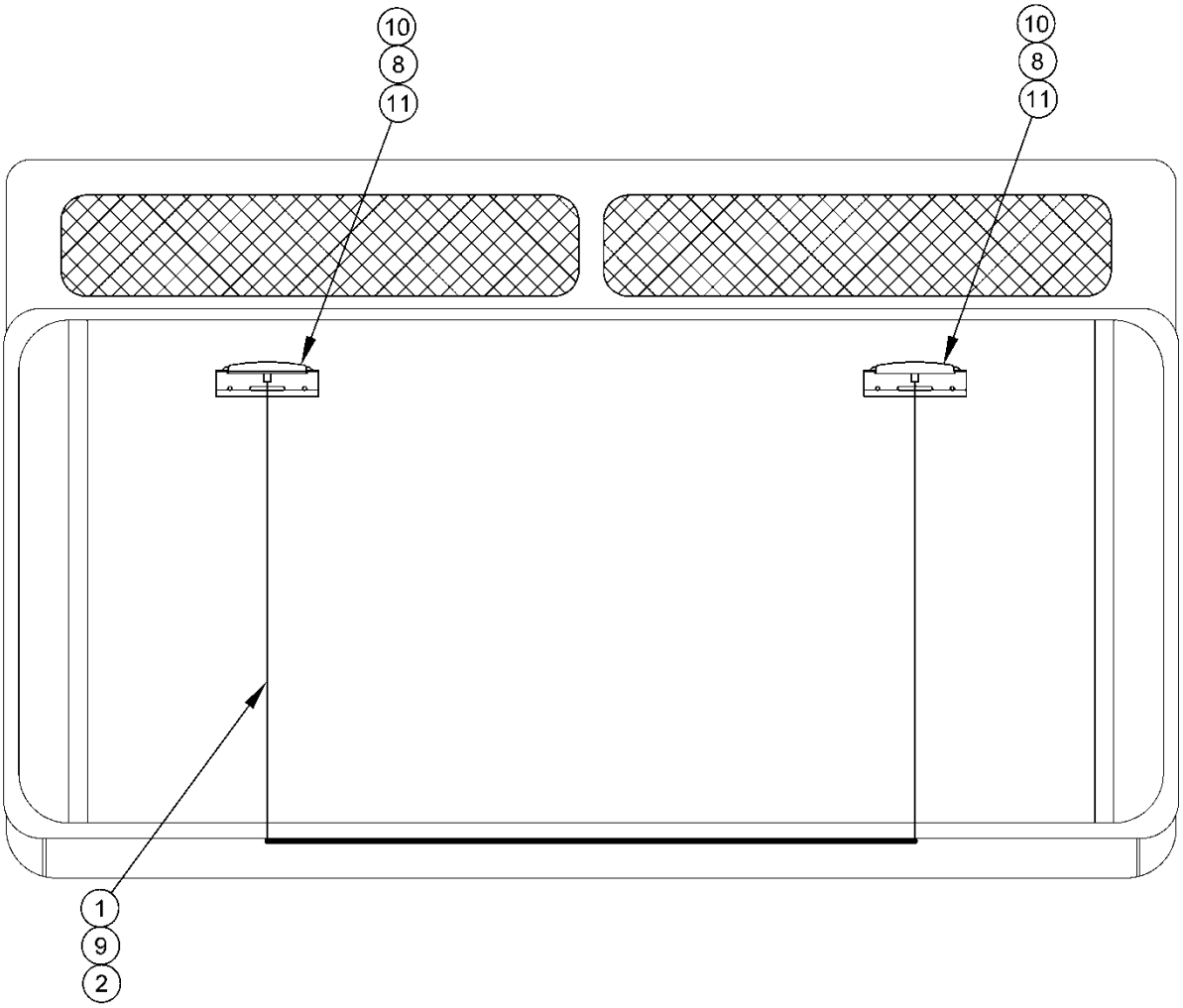
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	254-4473-005	CONTROL, Relay, Light, In-Cab Switch/Hydraulic Pump	-	REF
1	069-0032	KIT, Micro Relay (See Section 6)	-	1
2	108-1814	SWITCH, Toggle, SPST	-	1
3	108-2280	BOOT, Rubber	-	1

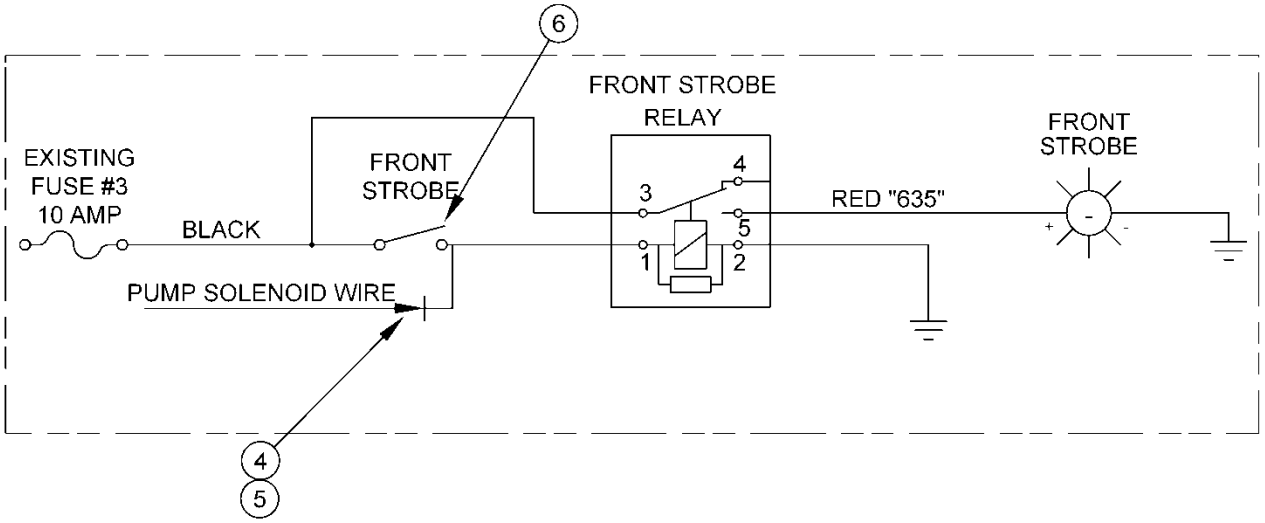
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MACK LE CAB MOUNTED STROBES

372-1993-052





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MACK LE CAB MOUNTED STROBES

372-1993-052

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-1993-052	STROBES, Cab Mounted, Mack LE	-	REF
1	036-1470	MOUNT, Back, Adhesive, 3/4” x 3/4"	-	40
2	036-1581	STRAP, Tie, Harness, 5-1/2”, #50 Limit, Nylon	-	40
-3	054-7350	TUBING, Shrink, 5/16”	-	3"
4	108-5632	DIODE, Electronic Control, 1 Amp.	-	1
5	108-5717-002	CONNECTOR, Butt, Non Insulated, 16-14 Ga.	-	1
6	108-7760	SWITCH, Rocker Type, SPST	-	1
-7	115-1226	ASSEMBLY, Work Light, w/Connector (See SM 7)	-	1
8	115-1180	LIGHT, LED, Strobe, Oval, Amber (See SM 7)	-	2
9	263-0899-001	HARNESS, Strobe, Cab Mounted (See SM 10)	-	1
10	274-0308-002	TAPE, Adhesive, Double Sided, 2” W, 0.45” Thickness	-	16"
11	311-2059	BRACKET, Strobe, Oval, Cab Mounted, 11 Ga., HRS	-	2

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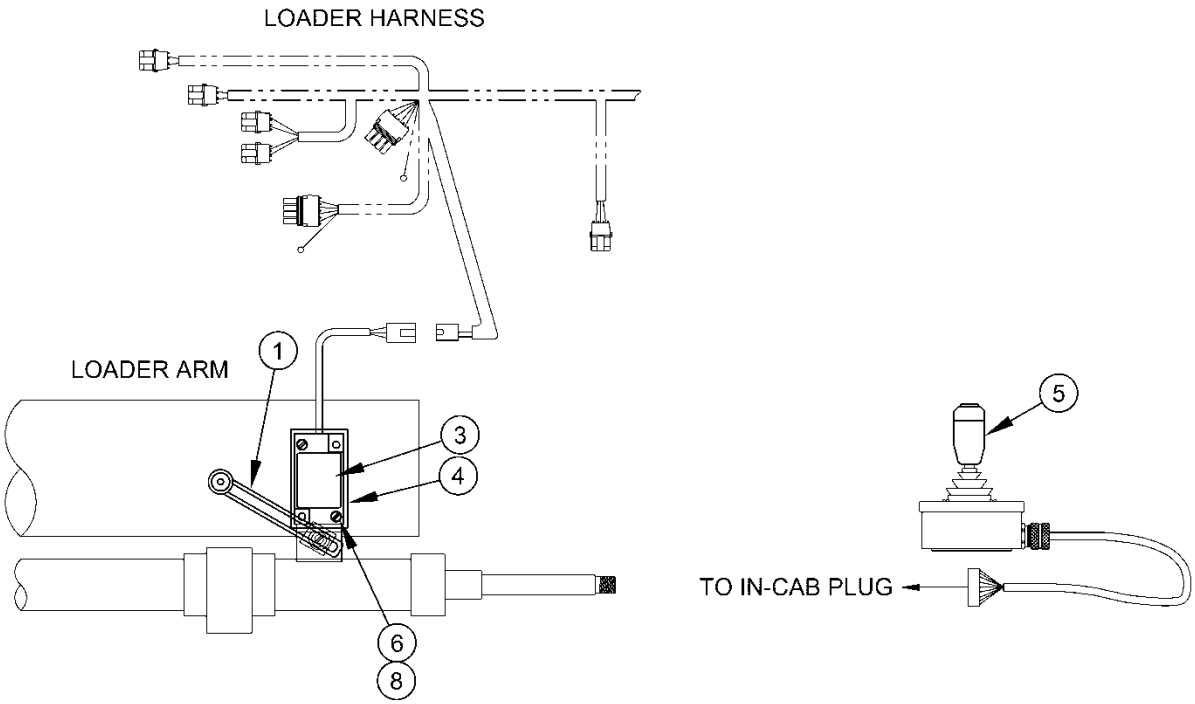
CONTROLS AND ACCESSORIES

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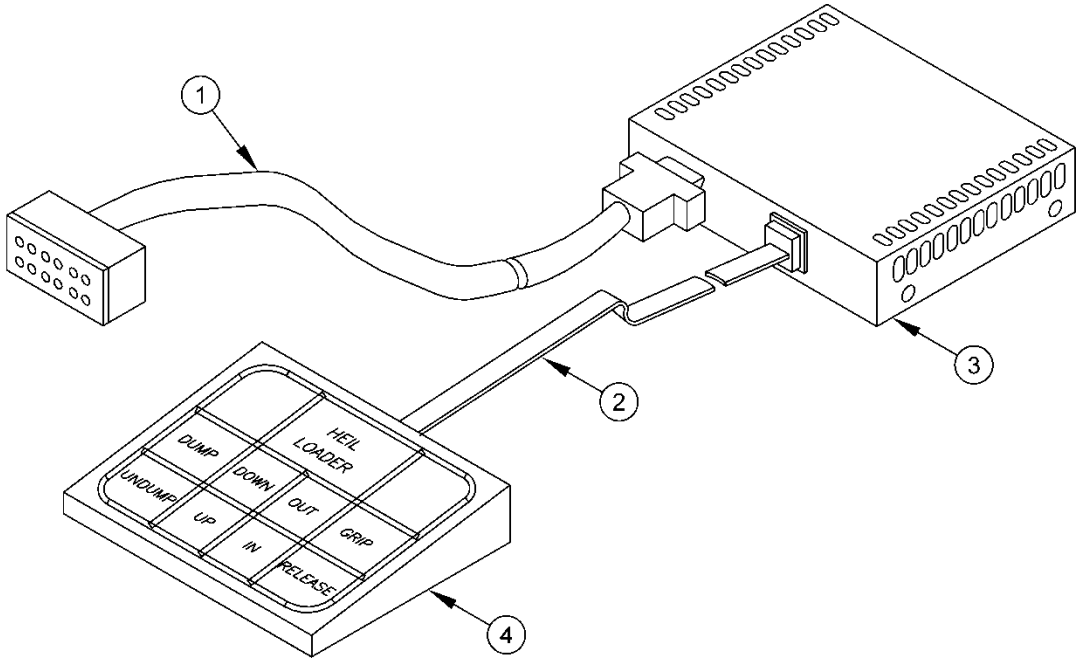
JOYSTICK KIT WITH DEUTSCH

272-8376-002



TOUCH PAD ASSEMBLY

254-3747



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JOYSTICK KIT WITH DEUTSCH

272-8376-002

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	272-8376-002	KIT, Joystick, w/Deutsch	-	REF
1	108-2096	SWITCH, Limit, Actuator Arm, HD	-	1
-2	-	NA	-	REF
3	108-7381	SWITCH, Limit, Heavy Duty	-	1
4	211-9910	BRACKET, Limit Switch, 7 Ga., HRS	-	1
5	254-4145	JOYSTICK, w/Up and In, Plug-In	-	1
6	FS400430	SCREW, Mach., Rd. Hd., 1/8”-32 x 2”	-	2
-7	FS500715	SCREW, Tek, 1/4" x 3/4"	-	4
8	FS220400	NUT, Special, 1/8”-24	-	2

TOUCH PAD ASSEMBLY

254-3747

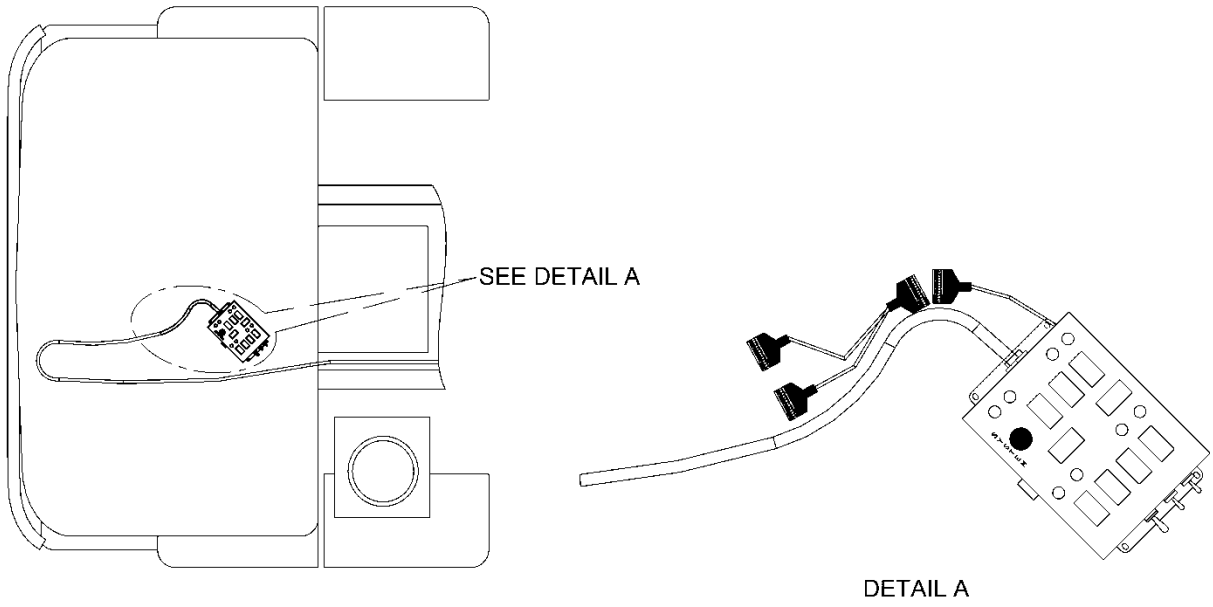
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	254-3747	ASSEMBLY, Touch Pad	-	REF
1	108-6805	HARNESS, Logic Box (See SM 10)	-	1
2	108-6806-001	ASSEMBLY, Cord, Telephone	-	1
3	254-4119	BOX, Logic	-	1
4	254-4120	BOX, Pad, Touch	-	1
-5	274-0305-001	VELCRO, Adhesive Backed	-	4

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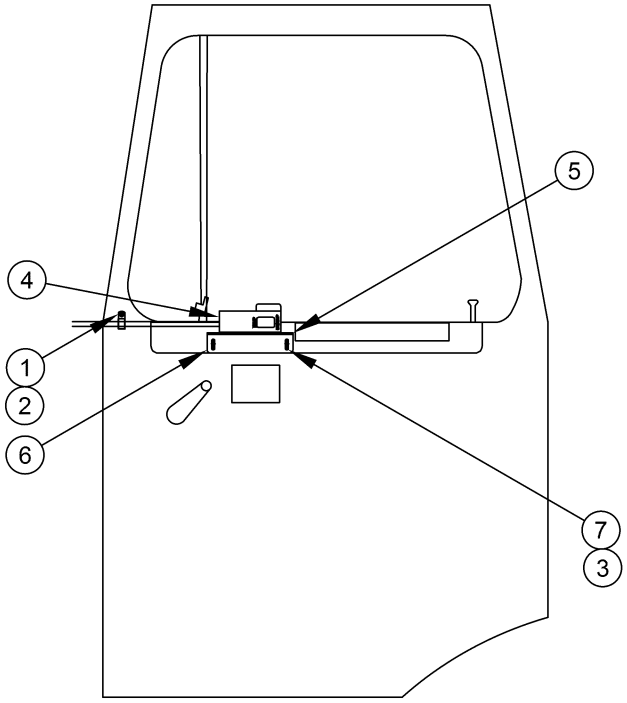
SPLITTER HARNESS INSTALLATION

372-3610



CS CONTROLS

254-4147



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SPLITTER HARNESS INSTALLATION
372-3610

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-3610	INSTALLATION, Splitter Harness	-	REF
-1	263-0093	HARNESS, Splitter (See SM 10)	-	1
-2	036-1640-208	TIE, Wire, 7-1/25", #50	-	4

CS CONTROLS
254-4147

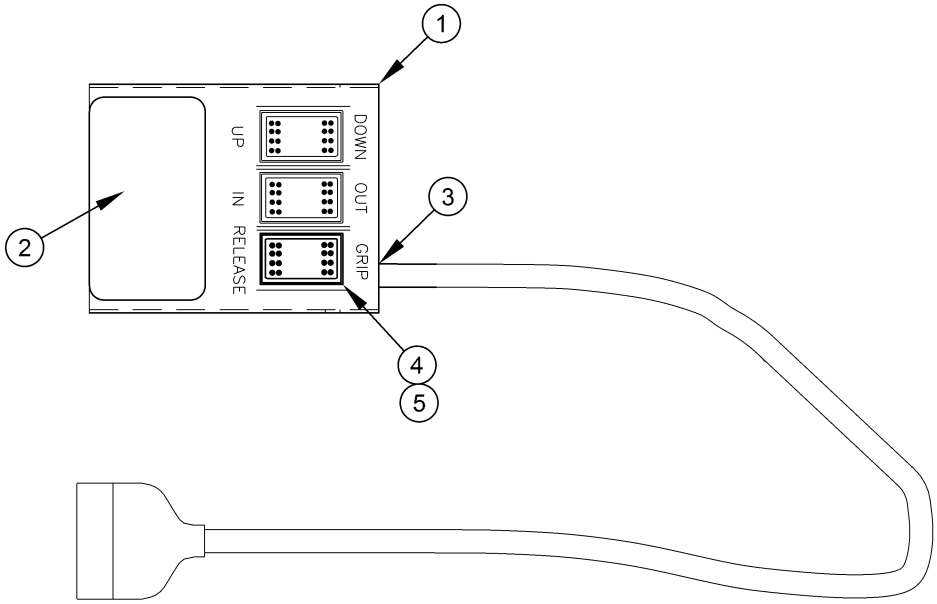
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	254-4147	CONTROLS, CS	-	REF
1	036-1122-008	CLAMP, Tube, 1/2" x 13/32"	-	12
2	047-2151-011	SCREW, Tek, 1/4"-14 x 1"	-	12
3	047-2316-005	NUT, Wing, Steel, 1/4"-20	-	2
4	254-4500	ASSEMBLY, Control, RH, 3+1 Button Soft Touch (See Pg. 7107)	-	1
5	274-0308-001	TAPE, Adhesive, Double Sided, 3" Width, 0.45" Thickness	-	5"
6	311-0802	BRACKET, RH Controls, 11 Ga.	-	1
7	FS070715	HHCS, 1/4"-20 x 3/4", Gr. 5	-	2
-8	372-3610	INSTALLATION, Splitter Harness (See Pg. 7105)	-	1

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3+1 BUTTON SOFT TOUCH RH CONTROL ASSEMBLY

254-4500



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3+1 BUTTON SOFT TOUCH RH CONTROL ASSEMBLY

254-4500

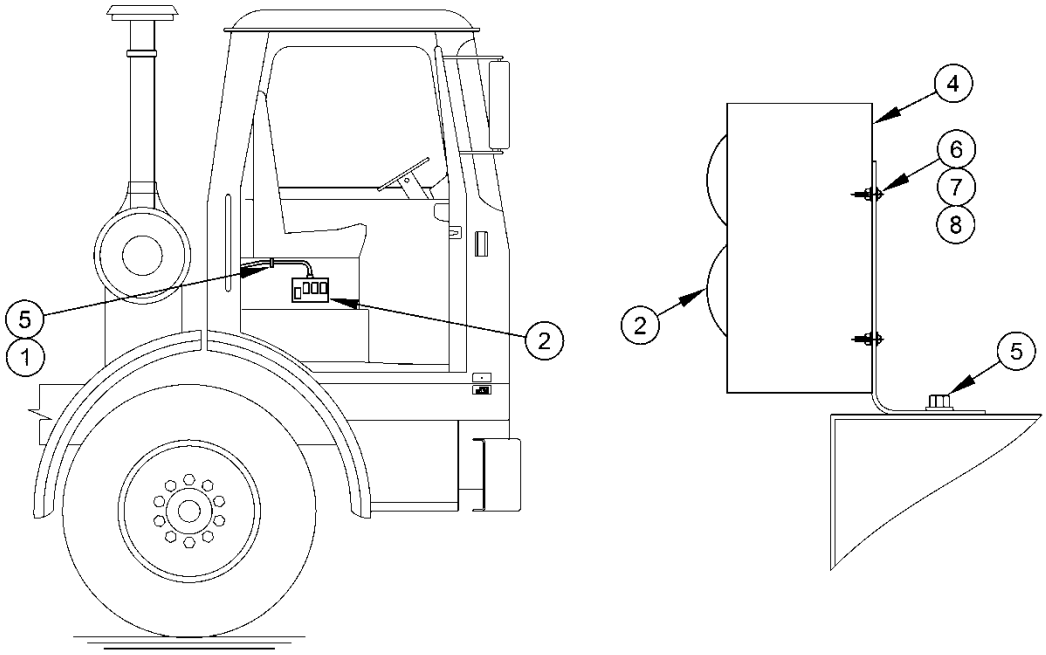
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	254-4500	ASSEMBLY, Control, RH, 3+1 Button Soft Touch	-	REF
1	254-4136-001	BASE, Switch	-	1
2	254-4136-002	PAD, Arm (Upholstered)	-	1
3	108-1759-002	CONNECTION, Watertight	-	1
4	108-7544-001	SWITCH, Rocker, Soft touch	-	4
5	108-7690	GUARD, Switch, Rocker	-	4

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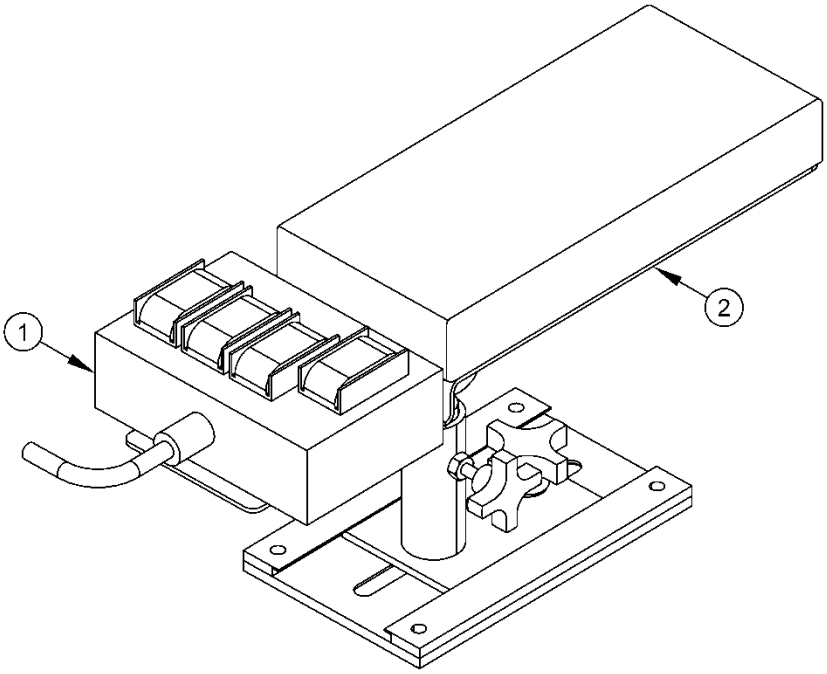
DUAL CONTROLS REMOTE CONTROL KIT

272-6609



PANAVISE ARM REST WITH 4 BUTTON CONTROL

254-4489



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DUAL CONTROLS REMOTE CONTROL KIT

272-6609

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	272-6609	KIT, Control, Remote, Dual Controls	-	REF
1	036-1122-008	CLAMP, Tube, 1/2'' x 13/32”	-	6
2	254-4429	SWITCH, Control, RH (w/Soft Touch Switch)	-	1
-3	NA	-	-	-
4	211-9133	BRACKET, RH Controls, 10 Ga., HRS	-	1
5	047-2151-011	SCREW, Tek, 1/4”-14 x 1”	-	10
6	FSP400420	SCREW, Mach., Rd. Hd., 1/8”-32 x 1”	-	4
7	FSP520400	WASHER, Flat, #10, SAE, Plated	-	8
8	FSP270400	NUT, #10-32, Plated	-	4

PANAVISE ARM REST CONTROL WITH 4 BUTTON

254-4489

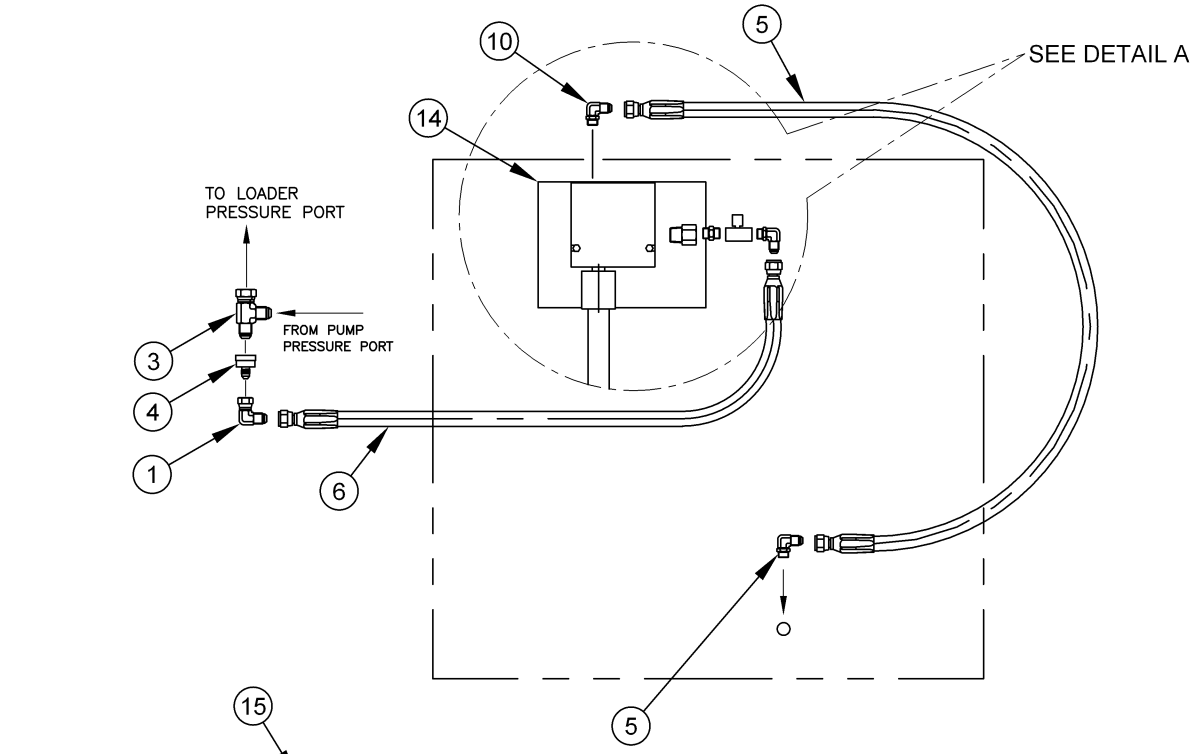
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	254-4489	CONTROL, w/4 Button, Arm Rest, Panavise	-	REF
1	254-4429	SWITCH, Control, RH (w/Soft Touch Switch)	-	1
2	372-0550-003	ARM REST, Panavise, Universal	-	1

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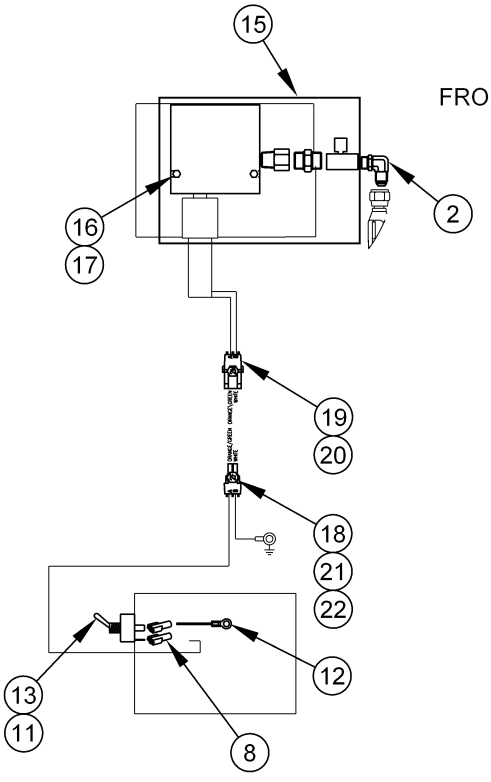
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FEATHER VALVE KIT

372-0548



FRONT VIEW OF HYDRAULIC OIL RESERVOIR



DETAIL A

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FEATHER VALVE KIT

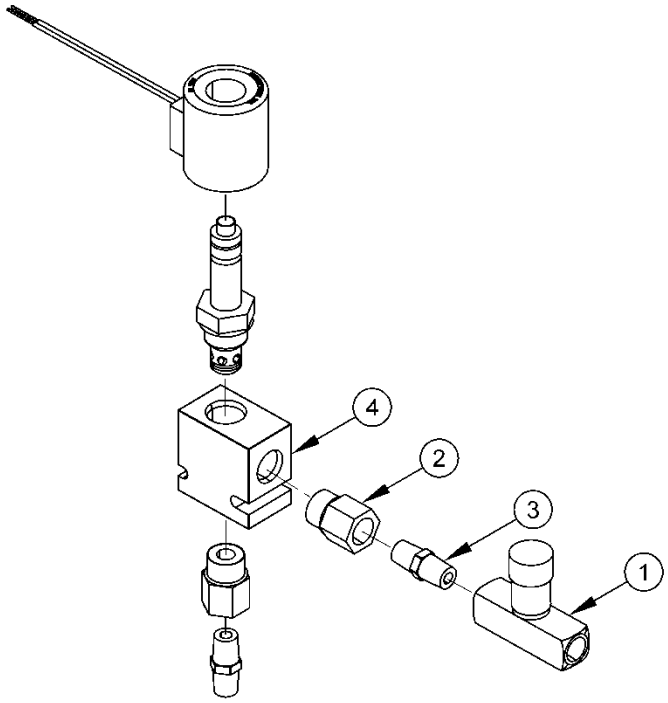
372-0548

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-0548	KIT, Valve, Feather	-	REF
1	054-2988-005	ELBOW, Swivel, 90°, 9/16"-18 x 3/8", #8	-	1
2	054-3340-005	ELBOW, 90°, Male, Tube to Str. Thd., 9/16”-18 x 3/8”	-	2
3	054-3624-008	TEE, Run, Female, Swivel, 37° Flare, 3/4"-1-1/16”-12	-	1
4	054-6547-008	REDUCER, JIC, 3/4" to 3/8" Tube	-	1
5	057-2341-022	ASSEMBLY, Hose, Loader Pressure, 3/8”, # FJIC	-	1
6	057-2341-059	ASSEMBLY, Hose, Loader Pressure, 3/8”, # FJIC	-	1
-7	NA	-	-	-
8	108-2050	DISCONNECT, Quick, Terminal, w/Heat Shrink, Female	-	2
-9	108-5034-001	LOOM, Electrical, Split Convoluted, Plastic, 1/4”	-	9
10	054-3666-006	ELBOW, 90°, NPT/JIC, 9/16”-18 to 1/4"-18	-	1
11	212-2877	DECAL, Finesse Valve	-	1
12	108-5702-008	TERMINAL, Ring, 14-16 Ga., #10 Screw	-	1
13	108-6815	SWITCH, Toggle	-	1
14	311-1821	BRACKET, Feather Valve, 1/4”-20, 11 Ga., HR	-	1
15	372-0971	ASSEMBLY, Valve, Finesse (See Pg. 7113)	-	1
16	FSP070726	HHCS, 1/4"-20 x 1-3/4”, Gr. 5, Plated	-	2
17	FSP520700	WASHER, Flat, 1/4” SAE, Plated	-	3
18	108-4827-004	CONNECTOR, Female, 2 Way, Packard	-	1
19	108-4827-003	CONNECTOR, Male, 2 Way, Packard	-	1
20	108-4827-111	TERMINAL, Male, 16-14 AWG, Packard	-	2
21	108-4827-121	TERMINAL, Female, 16-14 AWG, Packard	-	2
22	108-4827-132	SEAL, Cable, 16-14 AWG	-	4

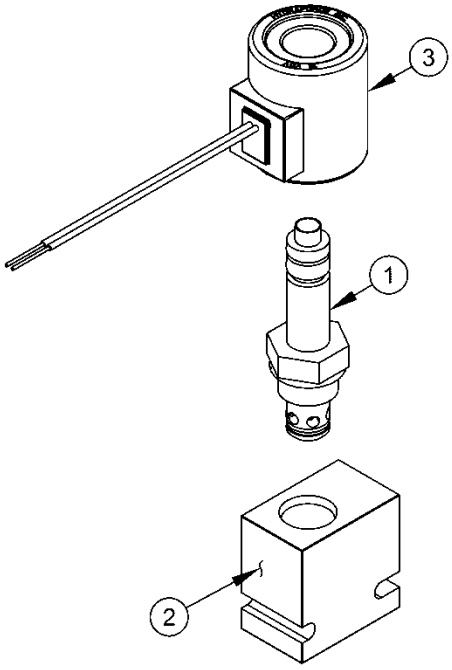
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FINESSE VALVE ASSEMBLY
372-0971



SOLENOID VALVE ASSEMBLY
372-2029



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FINESSE VALVE ASSEMBLY
372-0971

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-0971	ASSEMBLY, Valve, Finesse	-	REF
1	031-6234	VALVE, Needle, Flow Control	-	REF
2	054-6468-003	ADAPTER, Str. Thd.	-	REF
3	054-8927-002	NIPPLE, Brass, Hex, 1/4" NPT	-	REF
4	372-2029	ASSEMBLY, Valve, Solenoid (See Pg. 7113)	-	REF

SOLENOID VALVE ASSEMBLY
372-2029

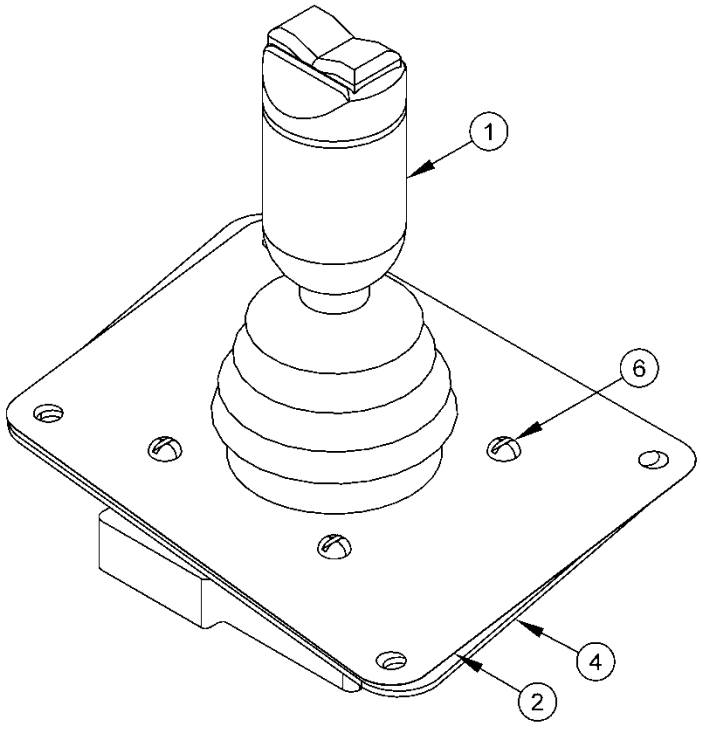
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-2029	ASSEMBLY, Valve, Solenoid	-	REF
1	031-6235	CARTRIDGE, Valve, Finesse	-	REF
2	031-6236	BODY, Valve, Finesse	-	REF
3	108-7678	COIL, Valve, Finesse	-	REF

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NO ILLUSTRATION

AUTOCAR JOYSTICK ASSEMBLY
254-4721-004



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AUTOCAR WX SUBSTITUTION JOYSTICK
372-4913-002

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-4913-002	JOYSTICK, Substitution, Autocar WX	-	REF
-1	263-0093	HARNESS, Splitter (See SM 10)	-	1
-2	-	NA	-	-
-3	254-4429	SWITCH, Control, RH (w/Soft Touch Switch)	-	1
-4	254-4721-004	ASSEMBLY, Joystick, Autocar	-	1
-5	274-0305-001	VELCRO, Adhesive Backed	-	1

AUTOCAR JOYSTICK ASSEMBLY
254-4721-004

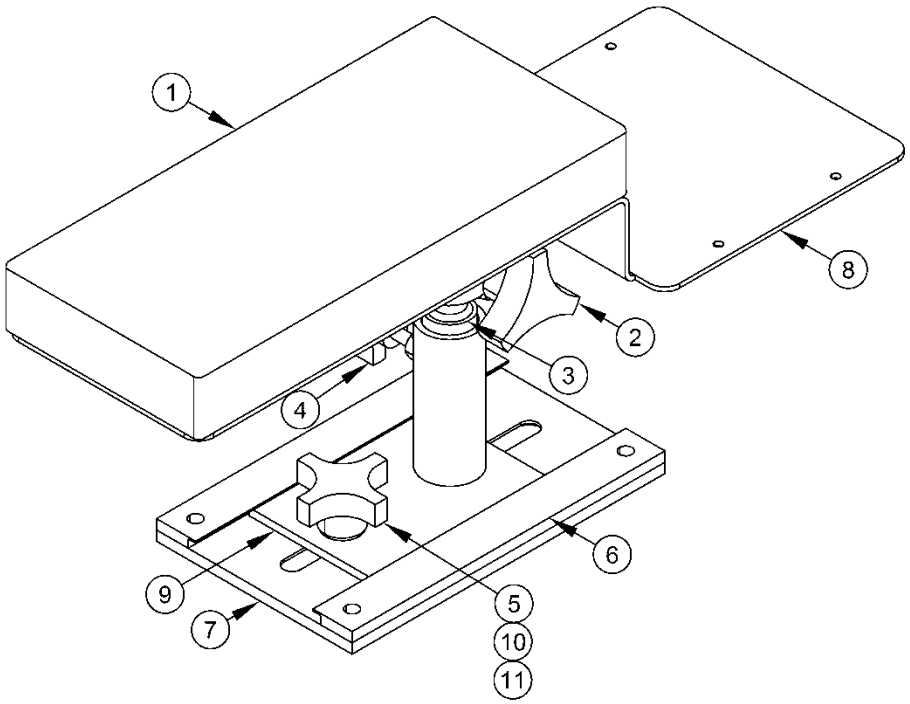
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	254-4721-004	ASSEMBLY, Joystick, Autocar	-	REF
1	108-6453	JOYSTICK	-	1
2	212-3028-011	DECAL, Joystick	-	1
-3	263-1436-014	HARNESS, Control, 4 Button (See SM 10)	-	1
4	311-3504-007	BRACKET, Joystick, Autocar	-	1
-5	372-3610	INSTALLATION, Splitter Harness	-	1
6	FSP420711	SCREW, Mach., 1/4”-20 x 1/2”, Rd. Hd., Plated	-	4
-7	254-4429	SWITCH, Control, RH (w/Soft Touch Switch)	-	1

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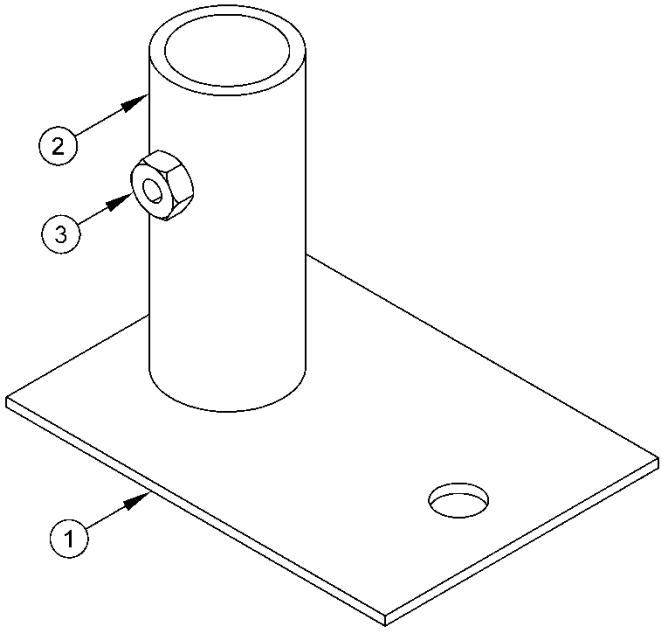
UNIVERSAL PANAVISE ARMREST

372-0550



ARMREST BASE ASSEMBLY

372-0550-001



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UNIVERSAL PANAVISE ARMREST

372-0550

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-0550	ARMREST, Panavise, Universal	-	REF
1	014-1859-001	PAD, Arm Rest	-	1
2	036-1885	PANAVISE	-	1
3	048-7178	PIVOT, Panavise	-	1
4	070-1810	KNOB, Stud, 1/4”-20 Thd.	-	1
5	070-1811	KNOB, 3/8”-16, Thd.	-	1
6	234-1967	PLATE, Guide, Panavise	-	2
7	311-1815	PLATE, Mtg., Arm Rest	-	1
8	311-1816-001	PLATE, Pad Mtg., Armrest, 12 Ga.	-	1
9	372-0550-001	ASSEMBLY, Base, Arm Rest (See Pg. 7117)	-	1
10	FS520900	WASHER, Flat, 3/8” SAE, Plain	-	1
11	FSP020920	BOLT, Carriage, 3/8” x 1”	-	1

ARMREST BASE ASSEMBLY

372-0550-001

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-0550-001	ASSEMBLY, Base, Arm Rest	-	REF
1	311-1814	PLATE, Base, Arm Rest	-	1
2	354-1742	PIPE, Arm Rest, Mount	-	1
3	FS260700	NUT, Hex, 1/4”-20, Plated	-	1

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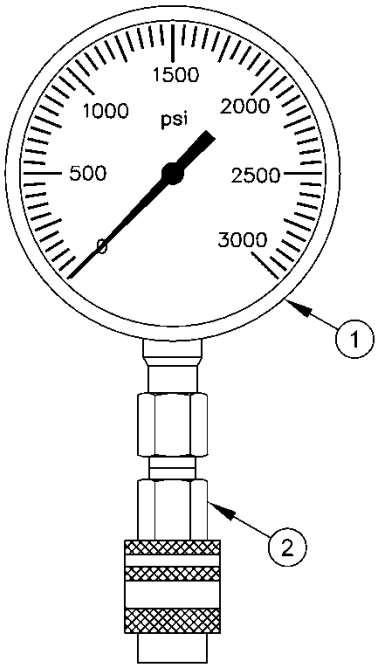
Rapid Rail® Co-Collector

MISCELLANEOUS OPTIONS

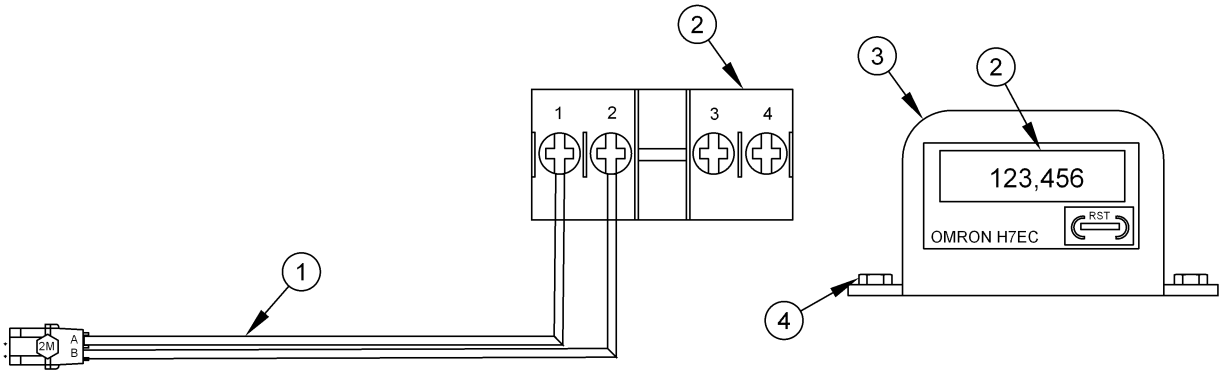
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GAUGE ASSEMBLY
067-0997



ARM CYCLE COUNTER KIT
108-5683, 108-5683-001



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GAUGE ASSEMBLY
067-0997

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	067-0997	ASSEMBLY, Gauge, 0-3000 PSI	-	REF
1	067-0994	GAUGE, 0-3000 PSI	-	1
2	031-5601-002	DISCONNECT, Quick, Female (See Pg. 7071)	-	1

ARM CYCLE COUNTER KIT
108-5683, 108-5683-001

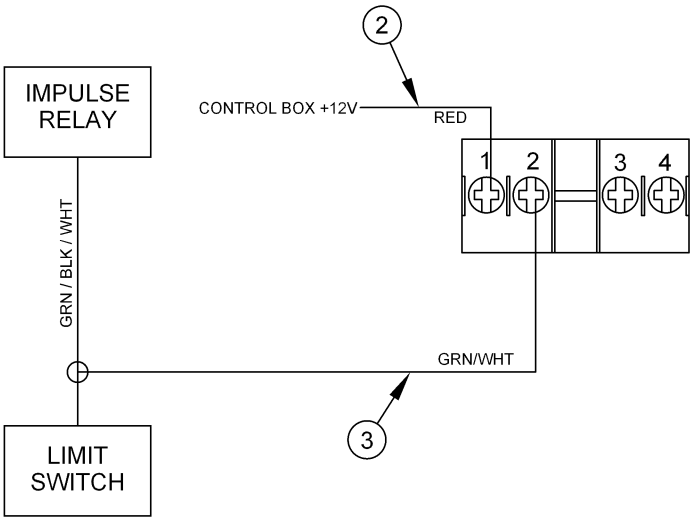
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	108-5683	KIT, Counter, Arm Cycle	A	REF
-	108-5683-001	KIT, Counter, Arm Cycle	B	REF
1	263-1502	HARNESS, Cycle Counter (See SM 10)	-	1
2	108-5567	COUNTER, LCD	-	1
3	211-9928	BRACKET, Hour Meter	-	1
4	FS500620	SCREW, Tek, 3/16” x 1”	-	4

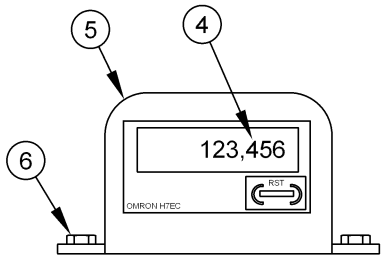
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PACKER CYCLE COUNTER

272-8347





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PACKER CYCLE COUNTER

272-8347

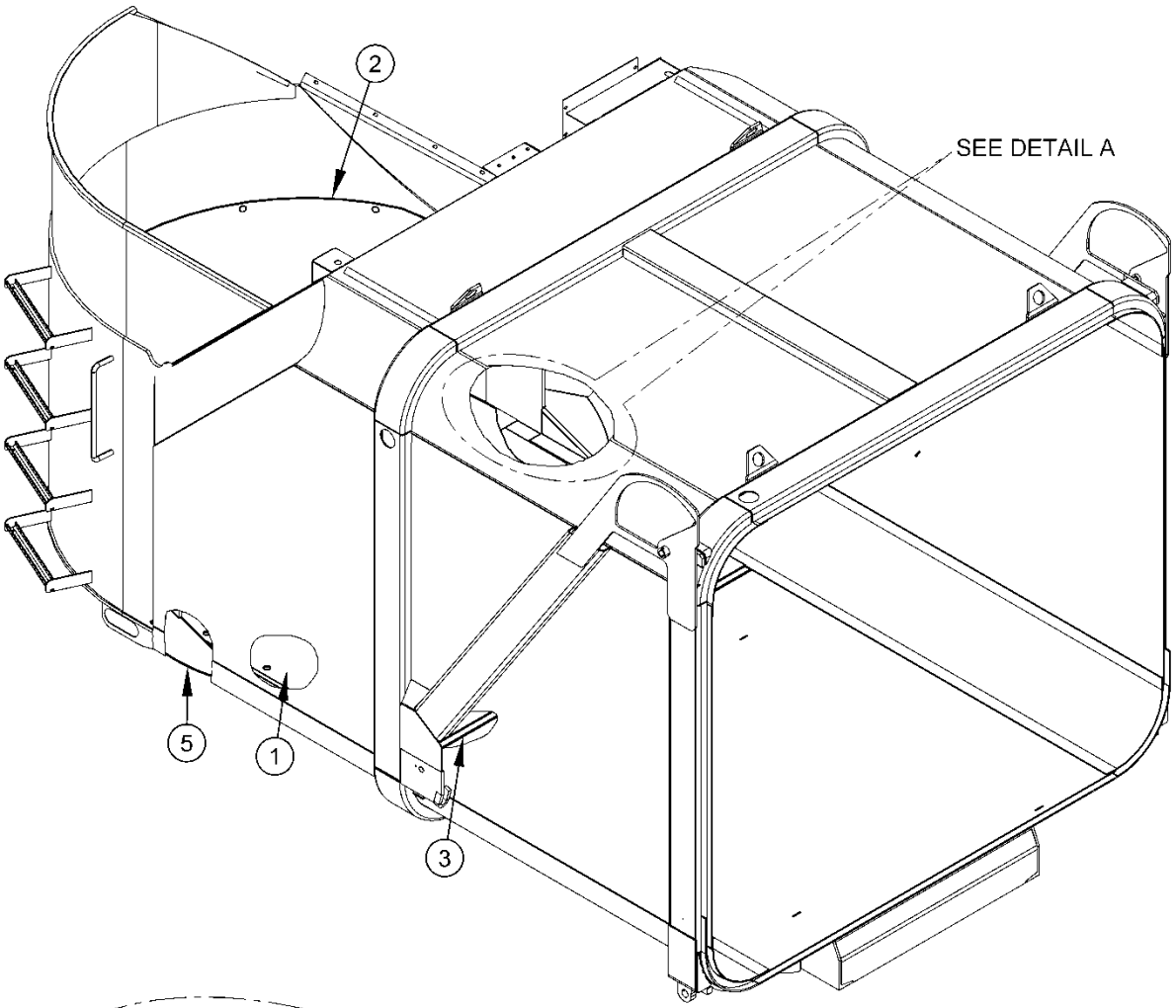
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	272-8347	COUNTER, Cycle, Packer	-	REF
-1	108-5034-001	LOOM, Electrical, Split Convoluted, Plastic, 1/4”	-	5'
2	108-5233-009	WIRE, Red, 16 Ga.	-	5'
3	108-5233-014	WIRE, Green w/White, 16 Ga.	-	5'
4	108-5567	COUNTER, LCD	-	1
5	108-5684	CONNECTOR, Push-On, 16-14 Ga., 0.25”	-	2
6	108-5703-008	CONNECTOR, Spade, 14-16 Ga., #10 Screw	-	2
-7	108-5975-002	TUBE, Shrink, Adhesive, Lined	-	1'
-8	211-9928	BRACKET, Hour Meter	-	1
-9	FS500720	SCREW, Tek, 1/4" x 1”	-	4

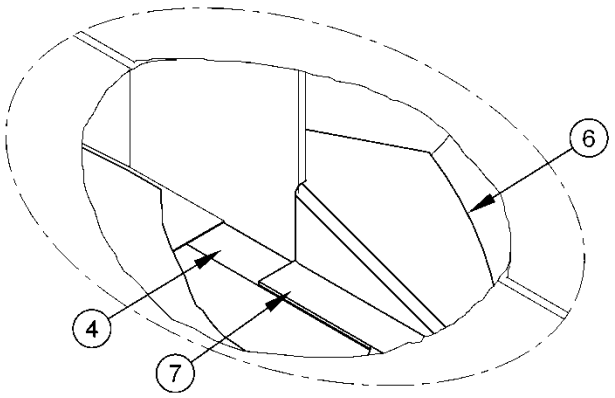
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HOPPER AND FLOOR LINER KIT

272-7278





DETAIL A

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HOPPER AND FLOOR LINER KIT

272-7278

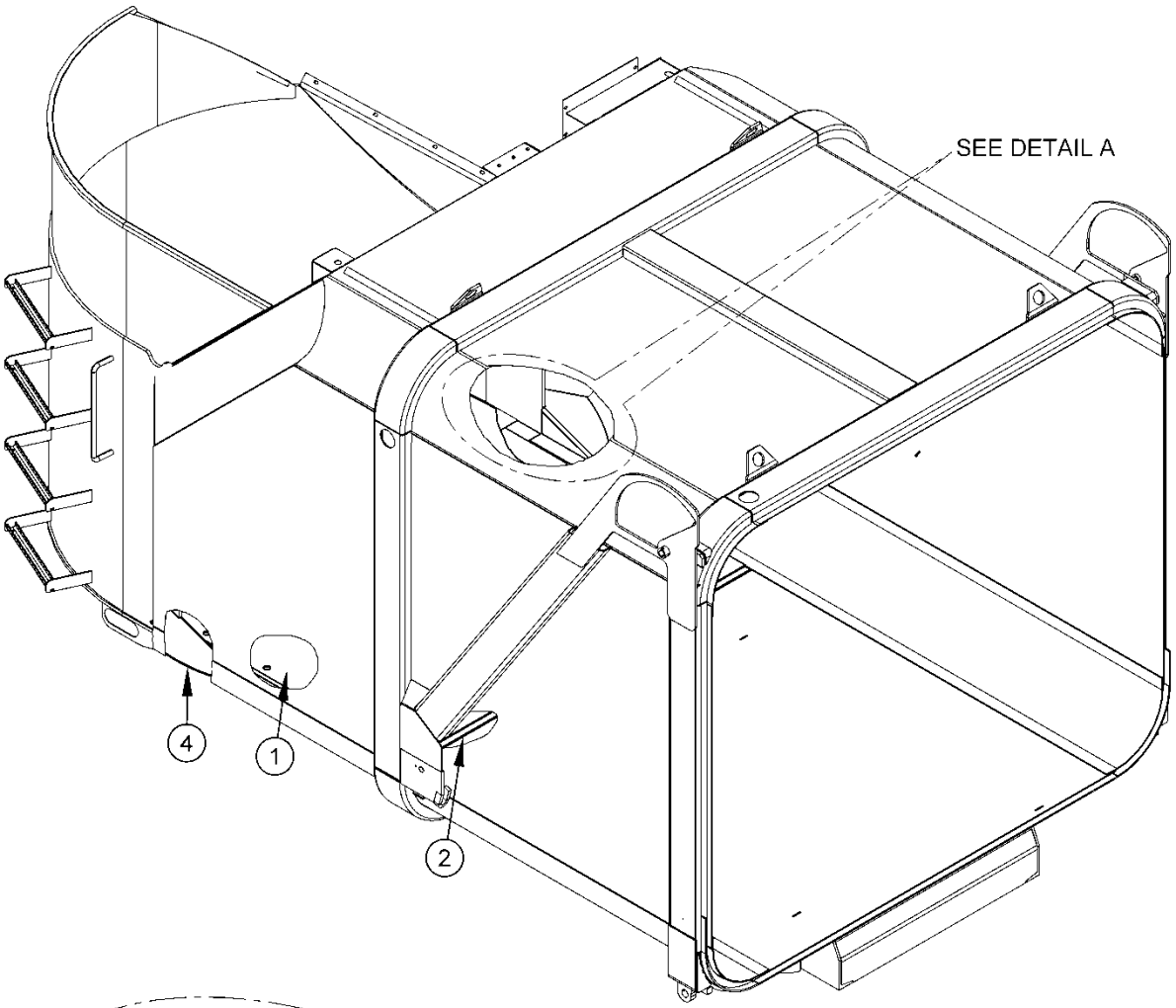
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	272-7278	KIT, Liner, Floor and Hopper	-	REF
1	272-7278-001	LINER, Hopper Floor, 3/16”	-	1
2	272-7278-002	LINER, Hopper Wall, 3/16”	-	1
3	272-7278-003	SPACER, Body Floor, 1/4"	-	1
4	272-7278-004	SPACER, Ear, Body Floor, 1/4"	-	2
5	272-7278-005	LINER, Corner Closeout, SS, 3/16”	-	1
6	272-7278-006	LINER, Corner Closeout, CS, 3/16”	-	1
7	272-7278-007	LINER, Side, Hopper and Floor, 3/21”	-	2
-8	-	NA	-	REF

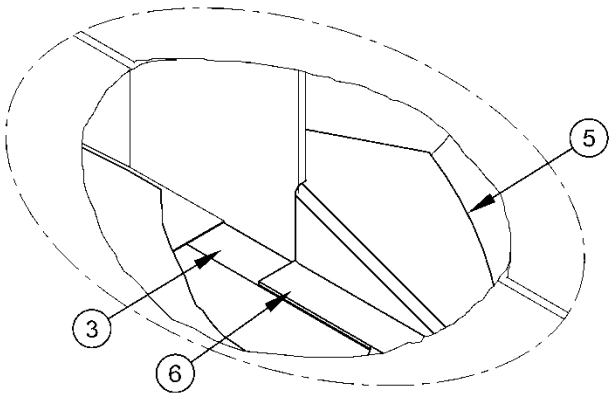
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HOPPER FLOOR LINER KIT

272-7288





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HOPPER FLOOR LINER KIT

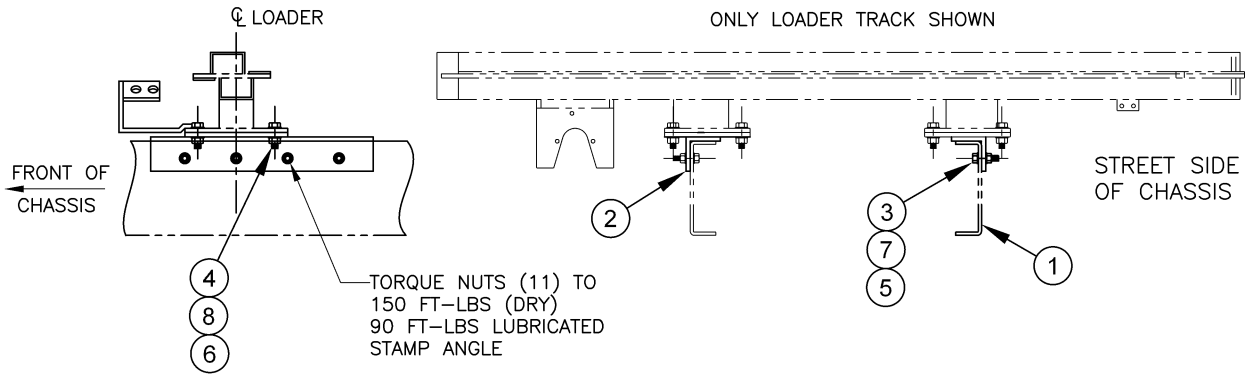
272-7288

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	272-7288	KIT, Liner, Hopper Floor	-	REF
1	272-7278-001	LINER, Hopper Floor, 3/16”	-	1
2	272-7278-003	SPACER, Body Floor, 1/4"	-	1
3	272-7278-004	SPACER, Ear, Body Floor, 1/4"	-	2
4	272-7278-005	LINER, Corner Closeout, SS, 3/16”	-	1
5	272-7278-006	LINER, Corner Closeout, CS, 3/16”	-	1
6	272-7278-007	LINER, Side, Hopper and Floor, 3/21”	-	2

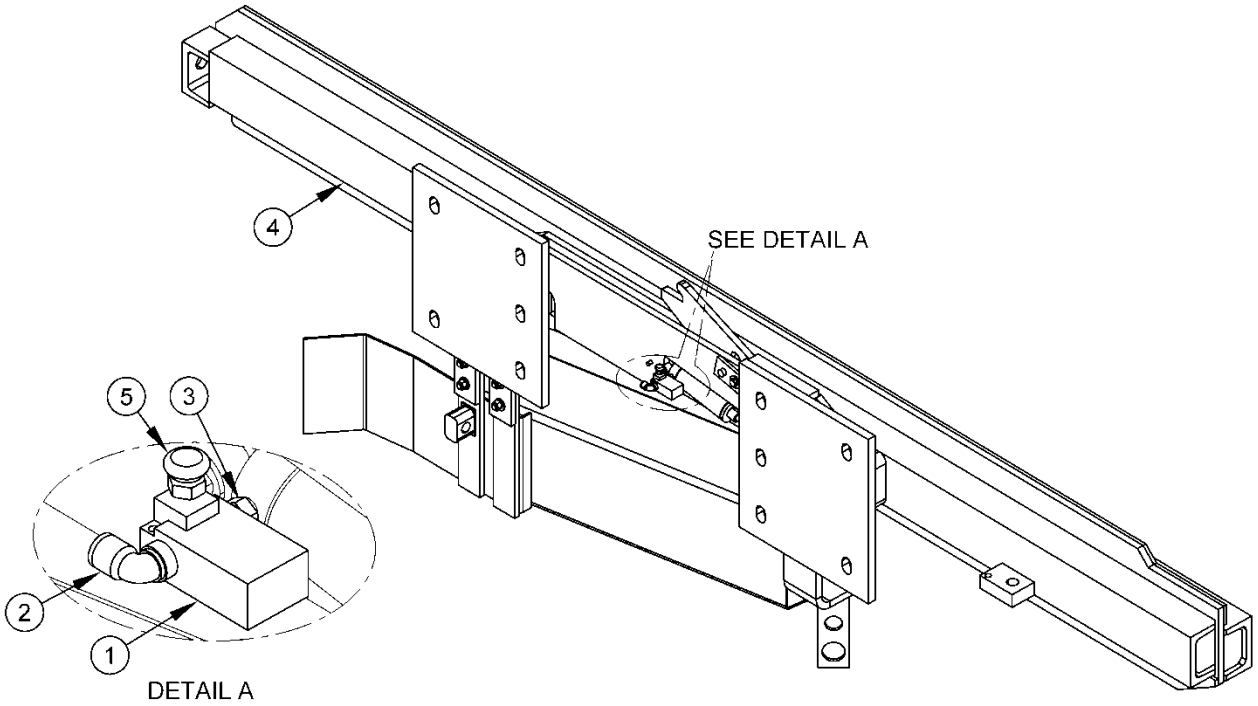
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LOADER MOUNT KIT
272-9662



LOADER AIR LINE KIT
272-8695-002



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LOADER MOUNT KIT
272-9662

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	272-9662	KIT, Mount, Loader	-	REF
1	311-0792	ASSEMBLY, Plate, Hold Down, SS, Loader Mount (Item Welded)	-	1
2	311-2803	ASSEMBLY, Plate, Hold Down, CS, Loader Mount (Item Welded)	-	1
3	FS071334	HHCS, 5/8”-11, Gr. 5, Plated	-	8
4	FS071532	HHCS, 3/4"-10 x 2-1/4”, Gr. 5	-	10
5	FS231300	NUT, Lock, 5/8”-11, Gr. 5	-	8
6	FS231500	NUT, Lock, 3/4"-10, Gr. 5	-	10
7	FS511300	WASHER, Flat, 5/8”, Std., Plain	-	16
8	FS511500	WASHER, Flat, 3/4" Std.	-	20

Note: Item 9 is Installation drawing.

LOADER AIR LINE KIT
272-8695-002

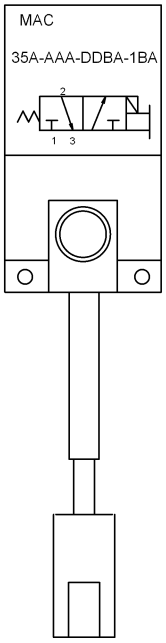
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	272-8695-002	KIT, Air Line, Loader	-	REF
1	031-6087-012	VALVE, Air, 12 V, Deutsch (See Pg. 7131)	-	1
2	054-8470-003	ELBOW, Air Line Connection, 1/8” NPT-1/4”	-	1
3	054-8927-001	NIPPLE, Hex, 1/4”-1/8”, Brass	-	1
4	093-2740	ASSEMBLY, Track (Item Welded)	-	REF
5	108-5354-006	BREATHER, Muncie, 1/8” NPT	-	1
-6	054-5449	TUBING, Air Line, 1/4", Nylon	-	10'
-7	108-5034-001	LOOM, Electrical, Split Convoluted, Plastic, 1/4”	-	10'

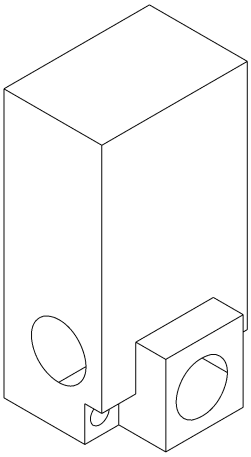
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DEUTSCH 12 V AIR VALVE

031-6087-012





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DEUTSCH 12 V AIR VALVE

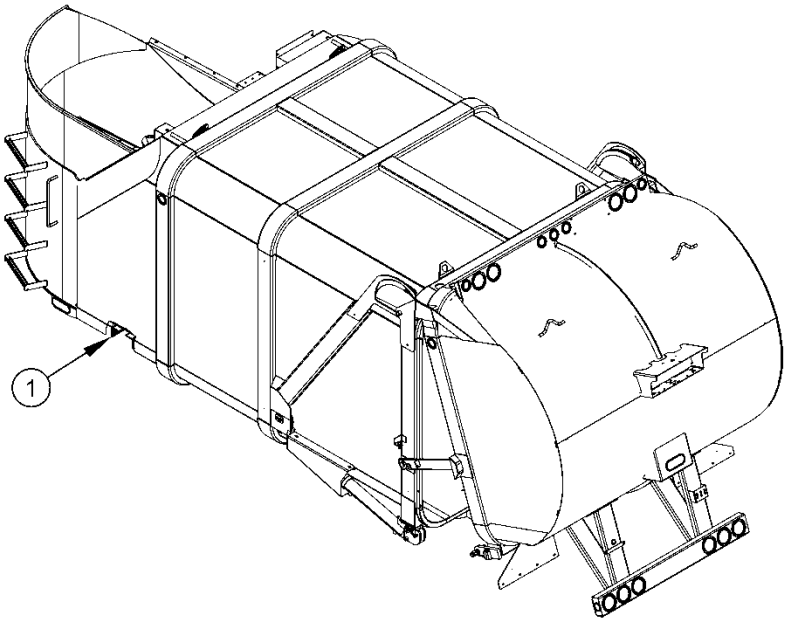
031-6087-012

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	031-6087-012	VALVE, Air, 12 V, Deutsch	-	REF
-1	031-5724-012	SOLENOID, Air	-	1
-2	NA	-	-	-
-3	108-6461-011	PLUG, Str., 2 Way, Deutsch DT Series	-	1
-4	NA	-	-	-
-5	NA	-	-	-
-6	108-5034-001	LOOM, Electrical, Split Convoluted, Plastic, 1/4”	-	2

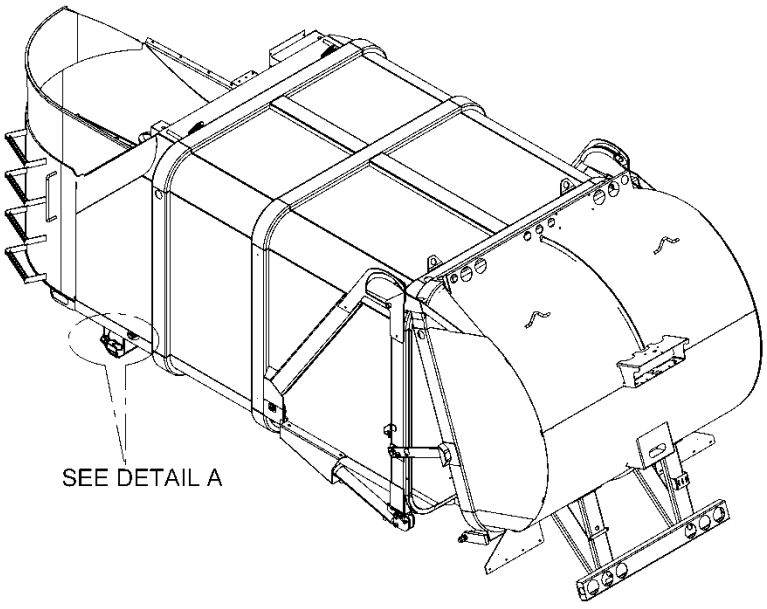
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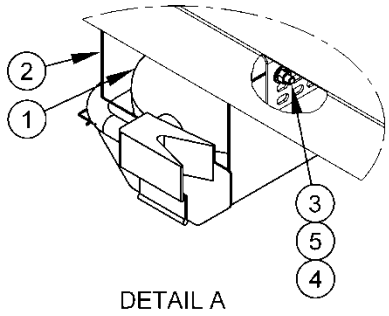
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FIRE EXTINGUISHER BRACKET MOUNT KIT
372-4814



FIRE EXTINGUISHER BODY MOUNT KIT
372-4816





DETAIL A

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FIRE EXTINGUISHER BRACKET MOUNT KIT
372-4814

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-4814	KIT, Bracket Mount, Fire Extinguisher	-	REF
1	126-6923	BRACKET, Mount, Fire Extinguisher	-	2

FIRE EXTINGUISHER BODY MOUNT KIT
372-4816

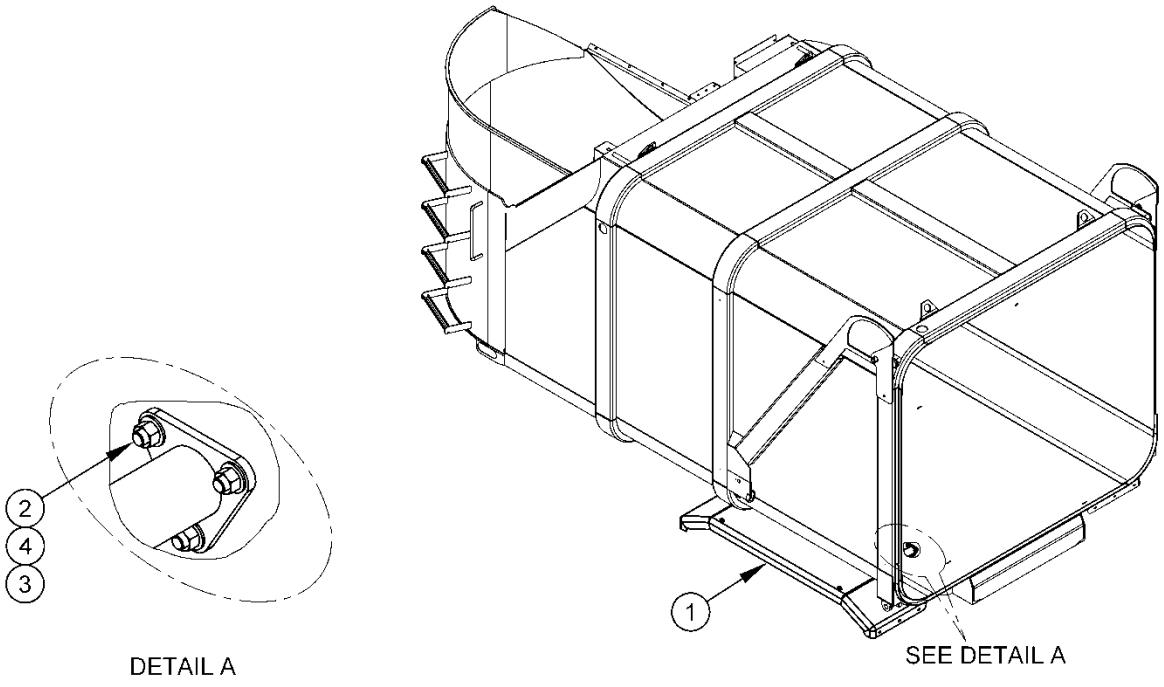
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-4816	KIT, Body Mount, Fire Extinguisher	-	REF
1	161-0345	FIRE EXTINGUISHER, 20#, 7.38" Dia.	-	1
2	311-4647-001	WELDMENT, Bracket, Fire Extinguisher	-	1
3	FS070920	HHCS, 3/8”-16 x 1”, Gr. 5	-	4
4	FS230900	NUT, Lock, 3/8”-16, Gr. 5	-	4
5	FS520900	WASHER, Flat, 3/8” SAE, Plain	-	4

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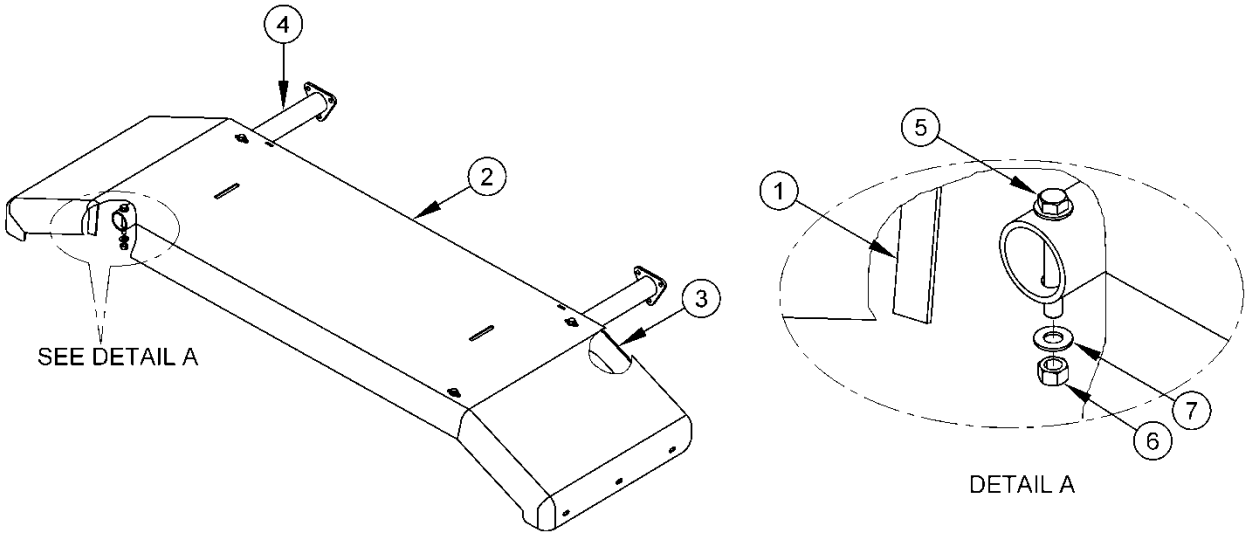
SINGLE AND TANDEM AXLE REAR FENDERS

372-4687-001, 372-4687-002



SINGLE AND TANDEM WHEEL WELL ASSEMBLIES

217-1771-001, 272-1771-002



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SINGLE AND TANDEM AXLE REAR FENDERS

372-4687-001, 372-4687-002

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-4687-001	FENDER, Rear, Single Axle	A	REF
-	372-4687-002	FENDER, Rear, Tandem Axle	B	REF
1	217-1771-001	ASSEMBLY, Well, Single Wheel (See Pg. 7135)	A	2
-1a	217-1771-002	ASSEMBLY, Well, Tandem Wheel (See Pg. 7135)	B	2
2	FSP080922	HHCS, 3/8”-16 x 1-1/4”, Gr. 8, Plated	-	12
3	FSP230900	NUT, Lock, 3/8”-16, Gr. 5, Plated	-	12
4	FSP520900	WASHER, Flat, 3/8’’, SAE, Plain	-	24

SINGLE AND TANDEM WHEEL WELL ASSEMBLIES

217-1771-001, 272-1771-002

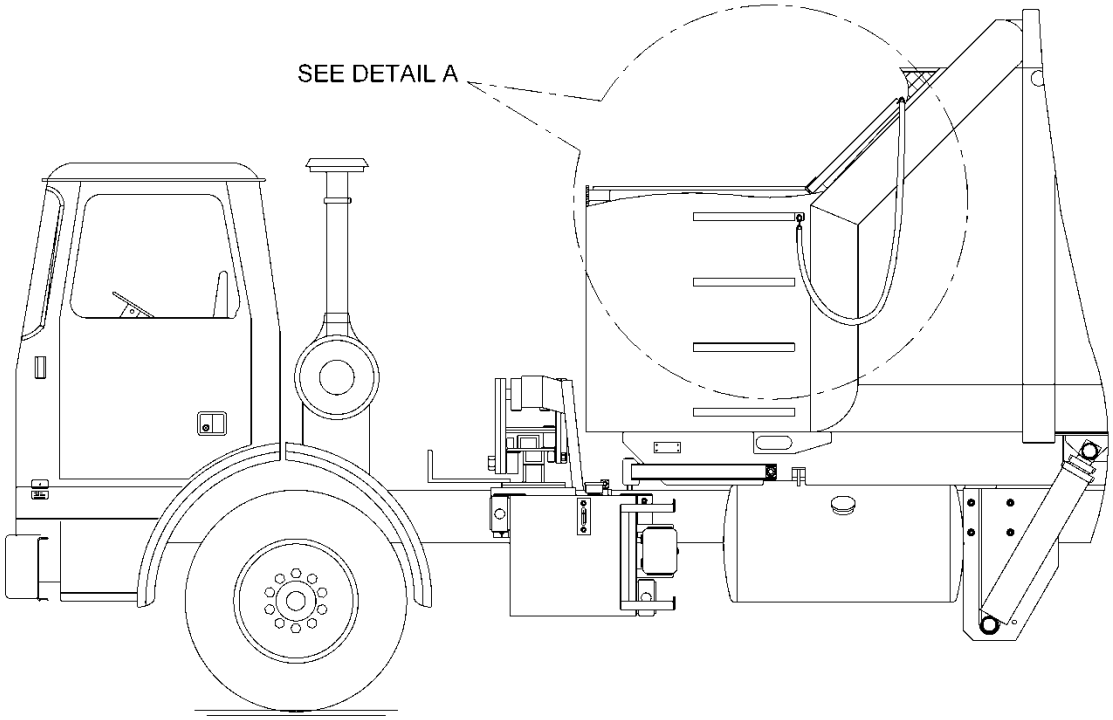
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	217-1771-001	ASSEMBLY, Well, Single Wheel	A	REF
-	217-1771-002	ASSEMBLY, Well, Tandem Wheel	B	REF
1	112-8611	CLOSURE, Roof Brace	-	4
2	217-1770-001	FENDER, Bolt-On, Single Axle	A	1
-2a	217-1770-002	FENDER, Bolt-On, Tandem Axle	B	1
3	234-3047-001	PLATE, Fender, Single Axle	A	1
-3a	234-3047-002	PLATE, Fender, Tandem Axle	B	1
4	311-4365	HANGER, Weldment, Wheel Well Mount	-	2
5	FSP080936	HHCS, 3/8”-16 x 2-3/4”, Gr. 8, Plated	-	4
6	FSP230900	NUT, Lock, 3/8”-16, Gr. 5, Plated	-	4
7	FSP520900	WASHER, Flat, 3/8’’, SAE, Plain	-	8

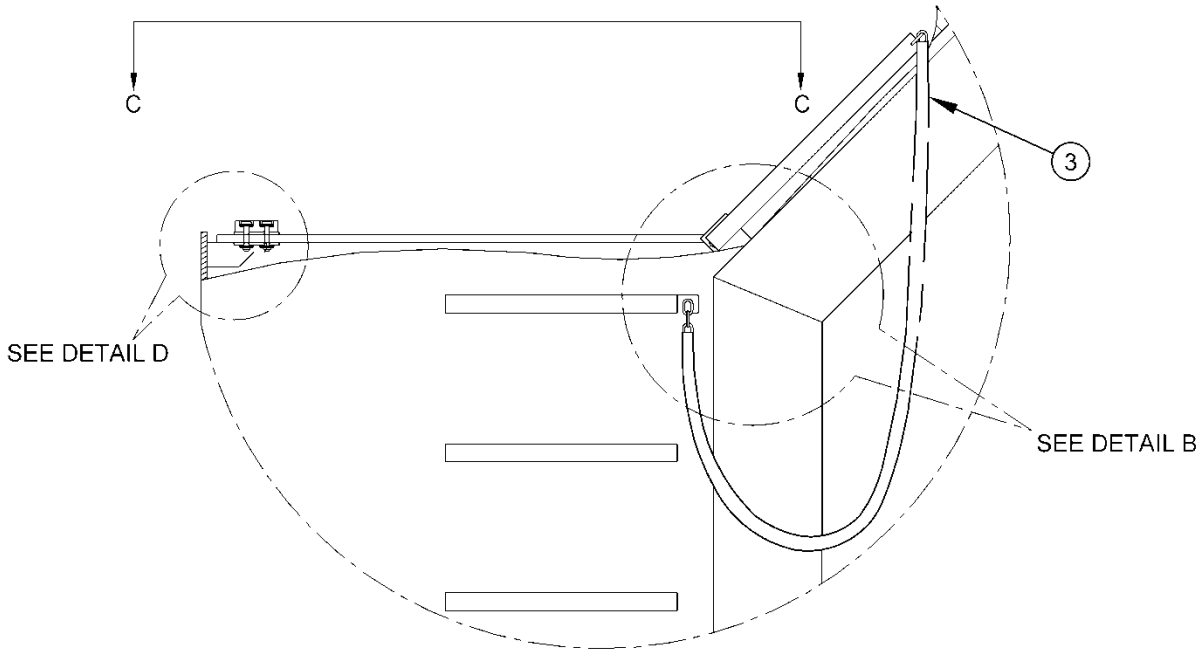
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HOPPER COVER KIT

560-0004





DETAIL A

SHEET 1 OF 2

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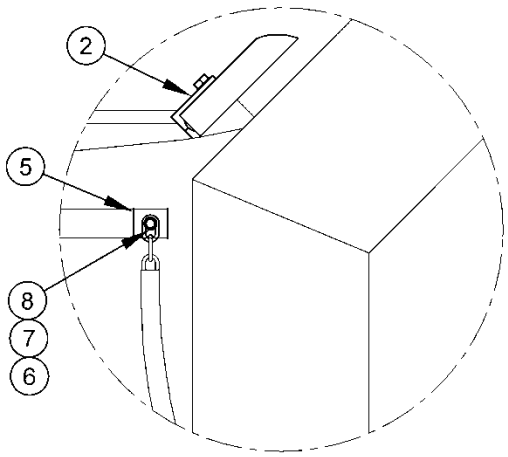
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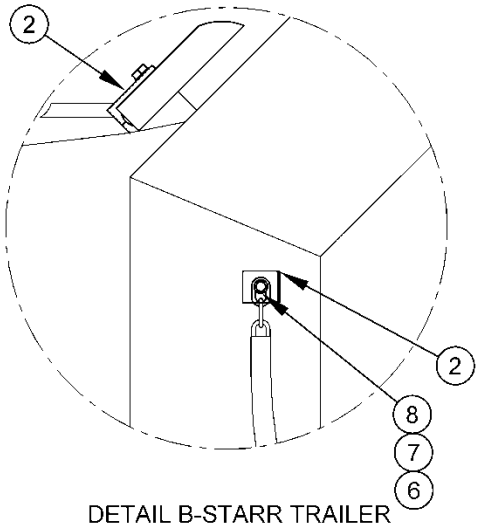
Rapid Rail® Co-Collector

HOPPER COVER KIT

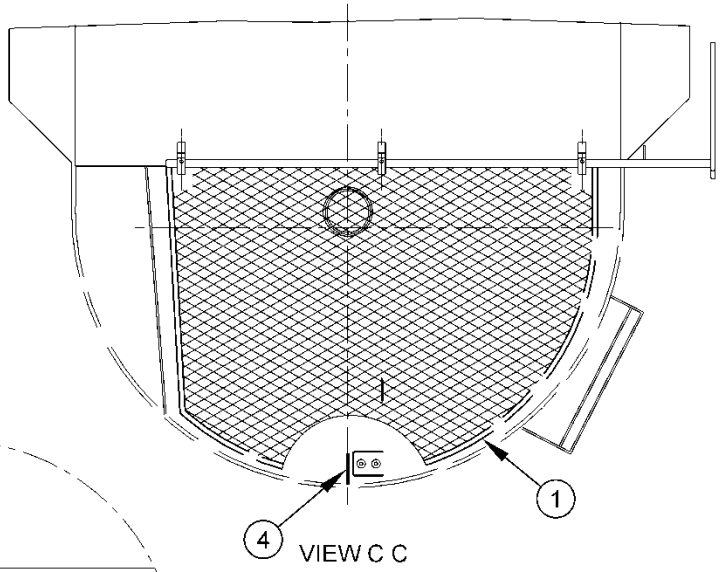
560-0004



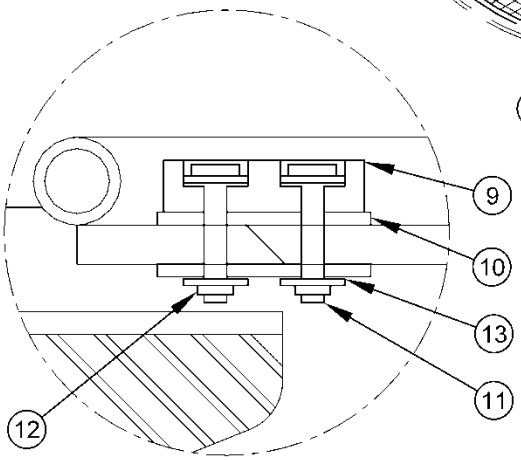
DETAIL B-RAPID RAIL (W/LADDER)



DETAIL B-STARR TRAILER



VIEW C C



DETAIL D

SHEET 2 OF 2

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HOPPER COVER KIT

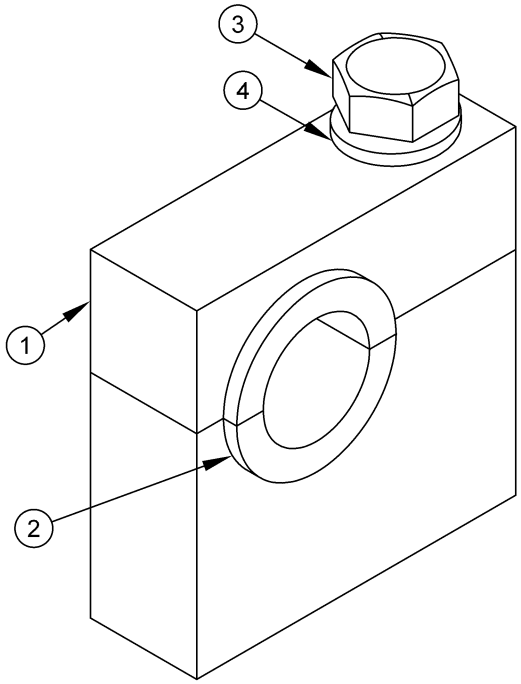
560-0004

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	560-0004	KIT, Cover, Hopper	-	REF
1	094-2153	WELDMENT, Hopper Cover	-	1
2	094-2154	ASSEMBLY, Journal, Hopper Cover (See Pg. 7141)	-	3
3	094-2156	ASSEMBLY, Chain, Hopper Cover (See Pg. 7141)	-	1
4	094-2155	SUPPORT, Hopper Cover	-	1
5	094-2157	BRACKET, Chain	-	1
6	FSP070720	HHCS, 1/4''-20 x 1”, Gr. 5, Plated	-	2
7	FSP230700	NUT, Lock, 1/4”-20, Gr. 5, Plated	-	2
8	FSP510700	WASHER, Flat, 1/4" Std., Plated	-	4
9	014-1537	PAD, Stop, Roll Bar	-	1
10	234-3090	PLATE, Backing, Rubber	-	2
11	FSP100926	HHCS, 3/8”-24 x 1-3/4”, Gr. 5, Plated	-	2
12	FSP240900	NUT, Lock, 3/8”-24, Gr. 5, Plated	-	2
13	FSP510900	WASHER, Flat, 3/8", Std., Plated	-	4

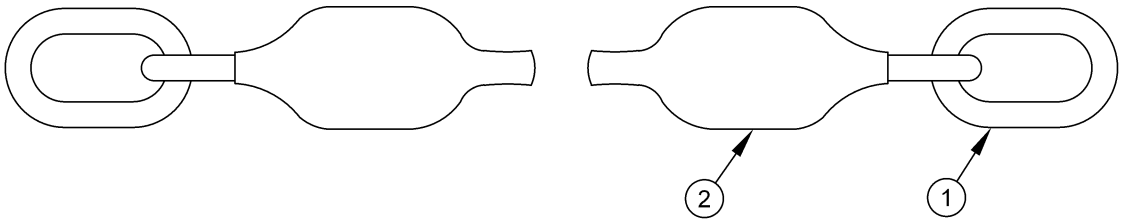
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HOPPER COVER JOURNAL ASSEMBLY
094-2154



HOPPER COVER CHAIN ASSEMBLY
094-2156



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HOPPER COVER JOURNAL ASSEMBLY
094-2154

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	094-2154	ASSEMBLY, Journal, Hopper Cover	-	REF
1	094-2162	BLOCK, Journal	-	1
2	094-2163	BUSHING, Split Hinge	-	1
3	FS081134	HHCS, 1/2"-13 x 2-1/2”, Gr. 8	-	1
4	FS541100	WASHER, Lock, 1/2”, Plain	-	1

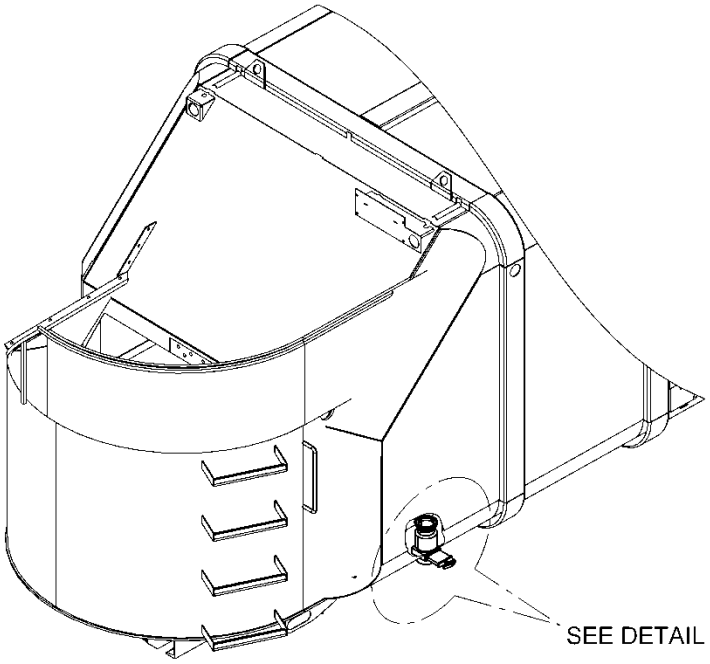
HOPPER COVER CHAIN ASSEMBLY
094-2156

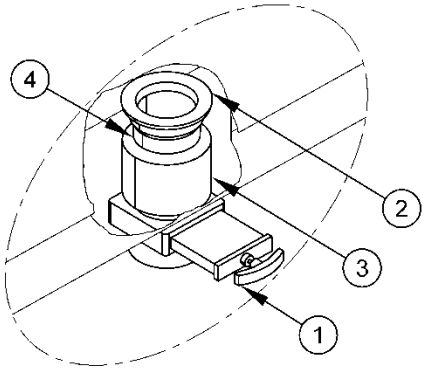
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	094-2156	ASSEMBLY, Chain, Hopper Cover	-	REF
1	043-0800	CHAIN, Hopper Cover, 3/16”	-	1
2	054-8950-009	TUBE, Heat Shrink, 1"	-	6

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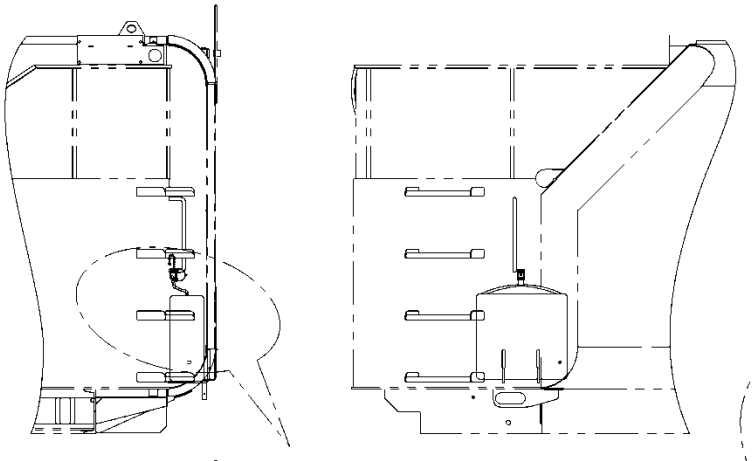
BODY DRAIN VALVE KIT
372-2954

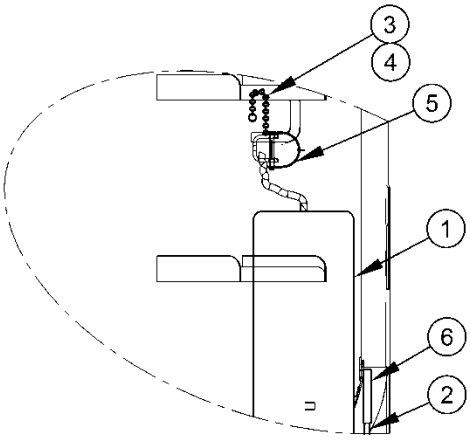




DETAIL A

SPILL KIT INSTALLATION
372-4166-001





DETAIL A

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BODY DRAIN VALVE KIT
372-2954

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-2954	KIT, Valve, Body Drain	-	REF
1	031-6060	VALVE, 3"	-	1
2	074-1827-011	FLANGE, 3”, Weld-On	-	1
3	FS684000	COUPLING, Half, Steel, 3”	-	1
4	FS884000	NIPPLE, Std., Black, 3”	-	1

SPILL KIT INSTALLATION
372-4166-001

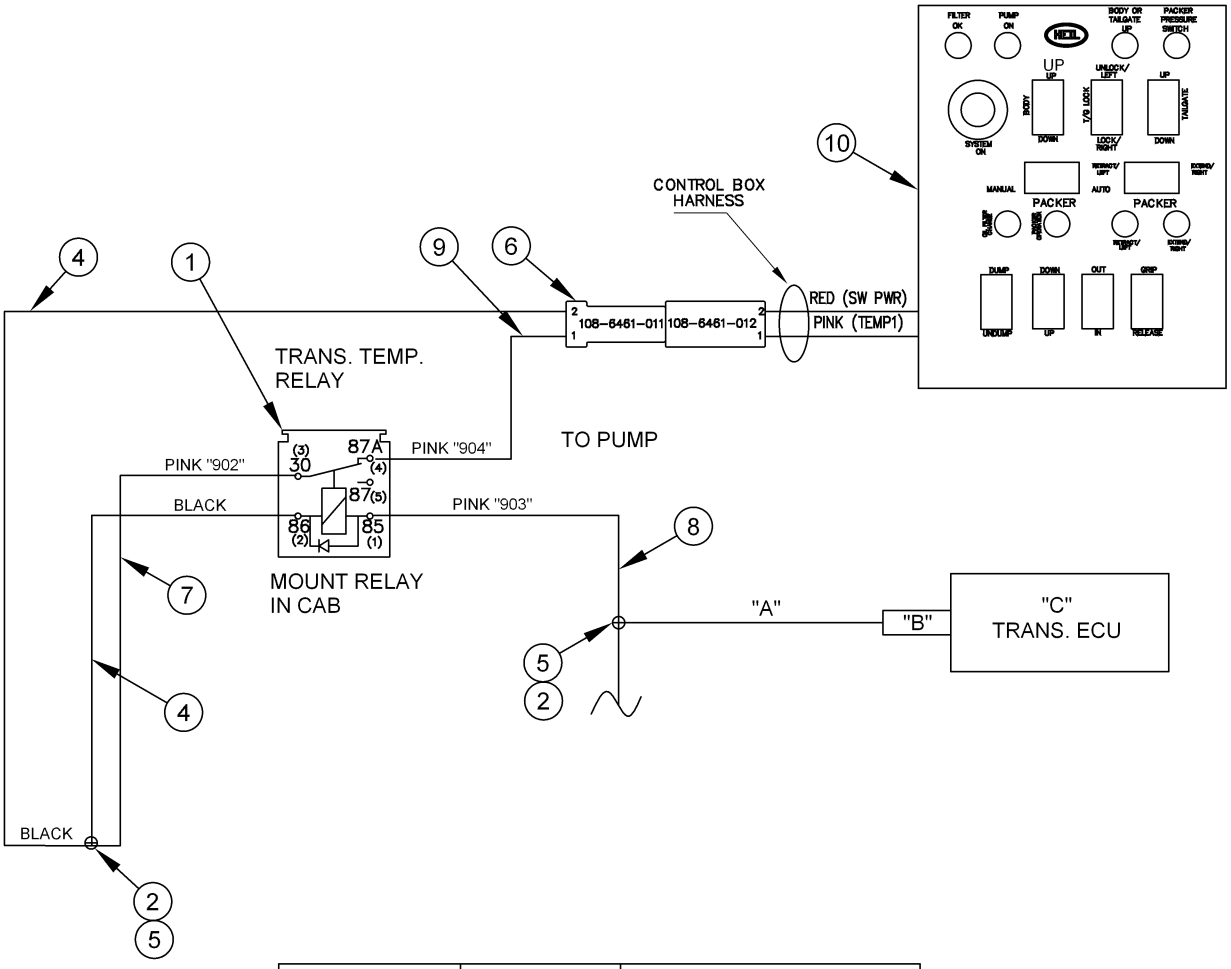
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-4166-001	INSTALLATION, Spill Kit	-	REF
1	035-3342	GUARD, Strobe/Beacon	-	2
2	043-0840	RING, Chain	-	1
3	043-0910-006	CHAIN, Link, Twist	-	1
4	047-2390	PIN, Quick Release	-	1
5	108-7583-038	TUBING, Shrink, 3/8”	-	1'
6	211-2650	BRACKET, 1/4" HRS Plate	-	1

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TRANSMISSION TEMPERATURE RELAY KIT

372-5790-004



WIRE # (A)	PIN # (B)	CONTROLLER (C)
105	V19	ALLISON WTEC III
164	64	ALLISON GEN IV

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TRANSMISSION TEMPERATURE RELAY KIT

372-5790-004

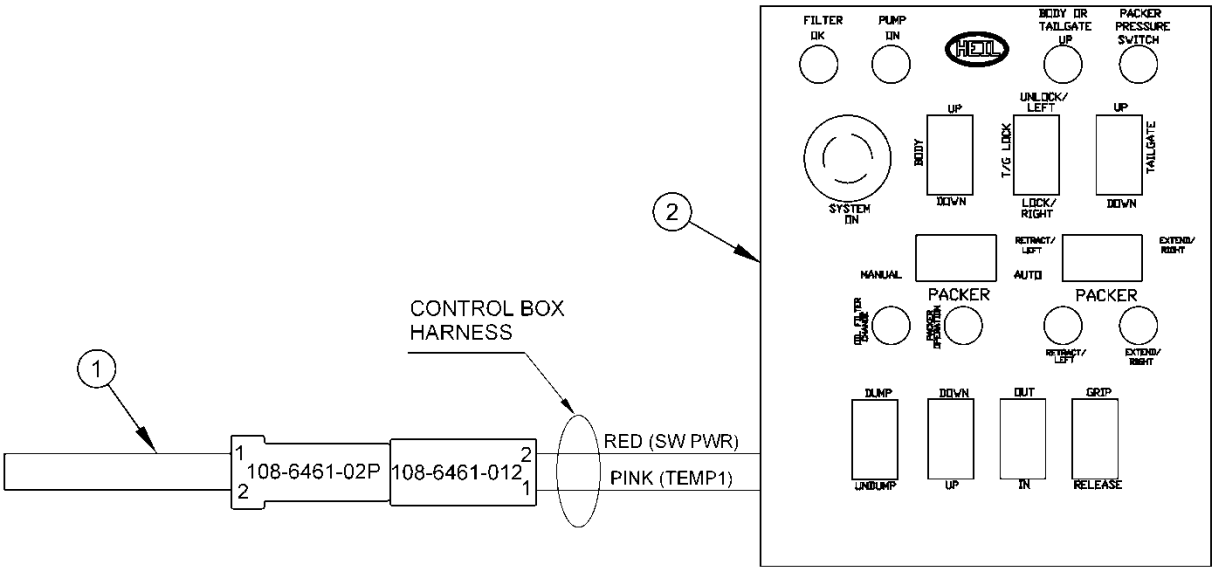
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-5790-004	KIT, Relay, Transmission Temperature	-	REF
1	069-0032	KIT, Micro Relay (See Section 6)	-	1
2	108-1110-002	CONNECTOR, Butt, 14-16 Ga.	-	2
-3	108-5233-009	WIRE, Red, 16 Ga.	-	10'
4	108-5233-017	WIRE, Black, 16 Ga.	-	10'
5	108-5975-002	TUBE, Shrink, Adhesive, Lined	-	1
6	108-6461-011	PLUG, Str., 2 Way, Deutsch DT Series	-	1
7	108-6718-902	WIRE, Pink “902”, 18 Ga.	-	10'
8	108-6718-903	WIRE, Pink “903”, 18 Ga.	-	10'
9	108-6718-904	WIRE, Pink “904”, 18 Ga.	-	10'
10	254-4519	BOX, Control	-	REF

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TRANSMISSION TEMPERATURE JUMPER KIT

372-5790-005



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TRANSMISSION TEMPERATURE JUMPER KIT

372-5790-005

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-5790-005	KIT, Jumper, Transmission Temperature	-	REF
1	263-1565-001	HARNESS, Jumper, Transmission Temperature (See SM 10)	-	1
2	254-4519	BOX, Control	-	REF

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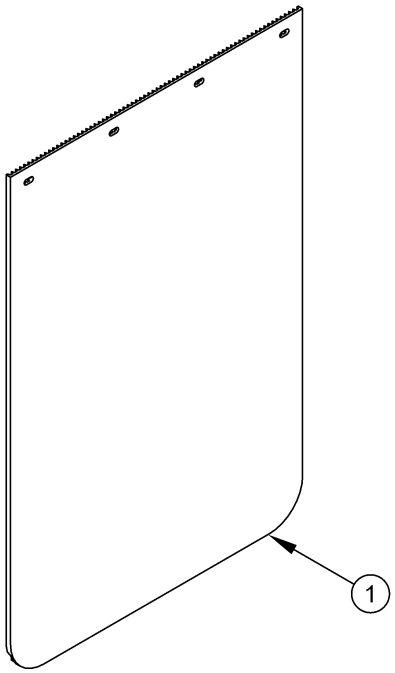
MUDFLAP KITS

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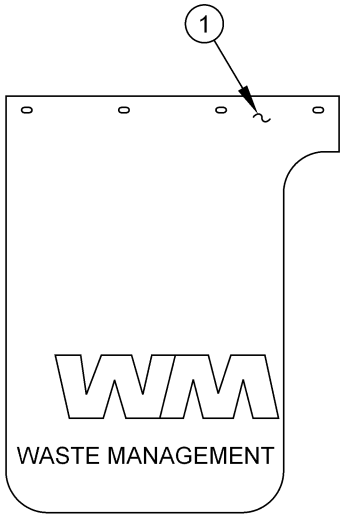
ALLIED MUDFLAP KIT

372-3615



WASTE MANAGEMENT MUDFLAP KITS

035-3221-001, 035-3221-002, 035-3221-003



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ALLIED MUDFLAP KIT

372-3615

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-3615	KIT, Mudflap, Allied	-	REF
1	035-3524	MUDFLAP, No Logo, Vertically Ribbed, 24" W x 36"	-	2

WASTE MANAGEMENT MUDFLAP KITS

035-3221-001, 035-3221-002, 035-3221-003

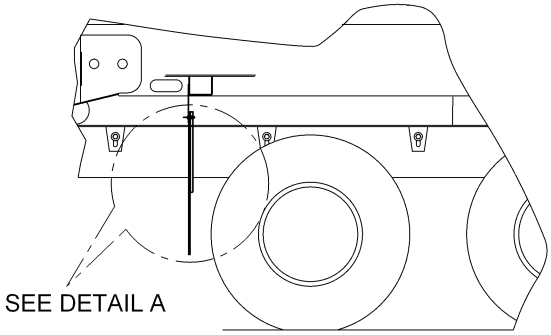
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	035-3221-001	KIT, Mudflap, Waste Management, Pusher/Tag Axles	A	REF
-	035-3221-002	KIT, Mudflap, Waste Management, Standard Axles	B	REF
-	035-3221-003	KIT, Mudflap, Waste Management, Front and Rear Axles	C	REF
1	035-3218-036	MUDFLAP, Waste Management, 36”	A, B	2
-1a	035-3218-036	MUDFLAP, Waste Management, 36”	C	4
-2	035-3219	MUDFLAP, Front, Waste Management	B	1
-3	035-3220	MUDFLAP, Front, Waste Management	B	1
-4	372-3436	INSTALLATION, Mudflap, Common (See Pg. 7153)	B, C	1

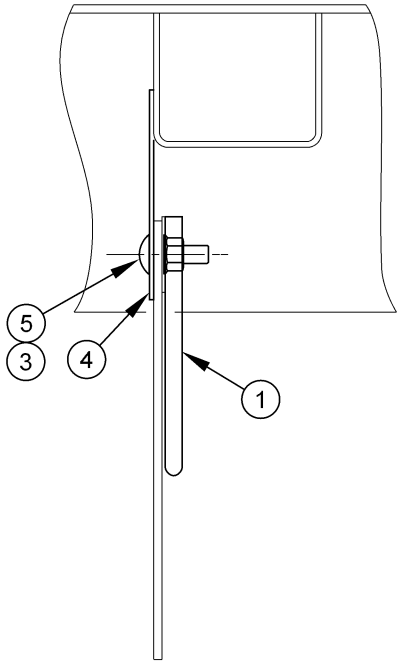
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MUDFLAP INSTALLATION

372-3436

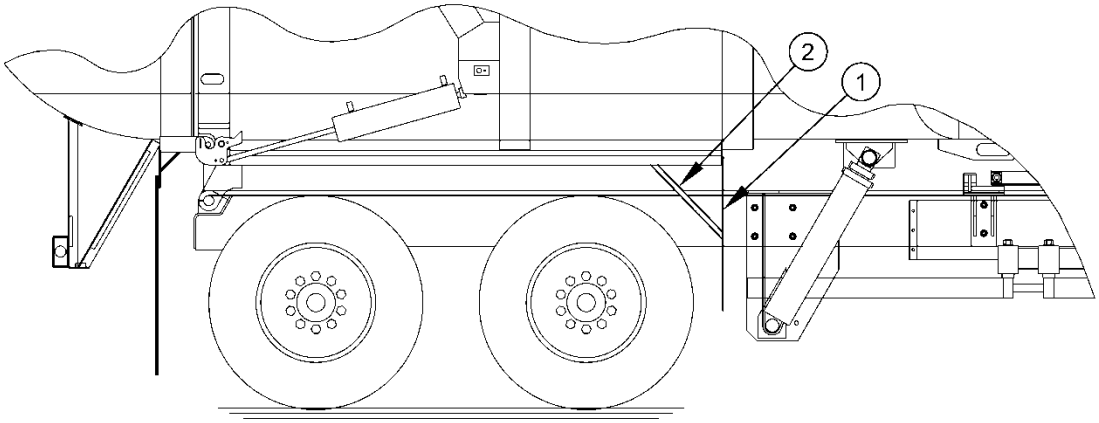




DETAIL A

FRONT OF FENDER MUD GUARD KIT

217-1441



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MUDFLAP INSTALLATION
372-3436

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-3436	INSTALLATION, Mudflap, Common	-	REF
1	311-5120	BRACKET, Mtg., Anti-Sail	-	2
-2	NA	-	-	-
3	047-2513-002	NUT, Flange, 5/16”-18	-	8
4	311-0405-002	BRACKET, Mudflap, Waste Management	-	2
5	FSP020822	BOLT, Carriage, 5/16” x 1-1/4”, Plated	-	8

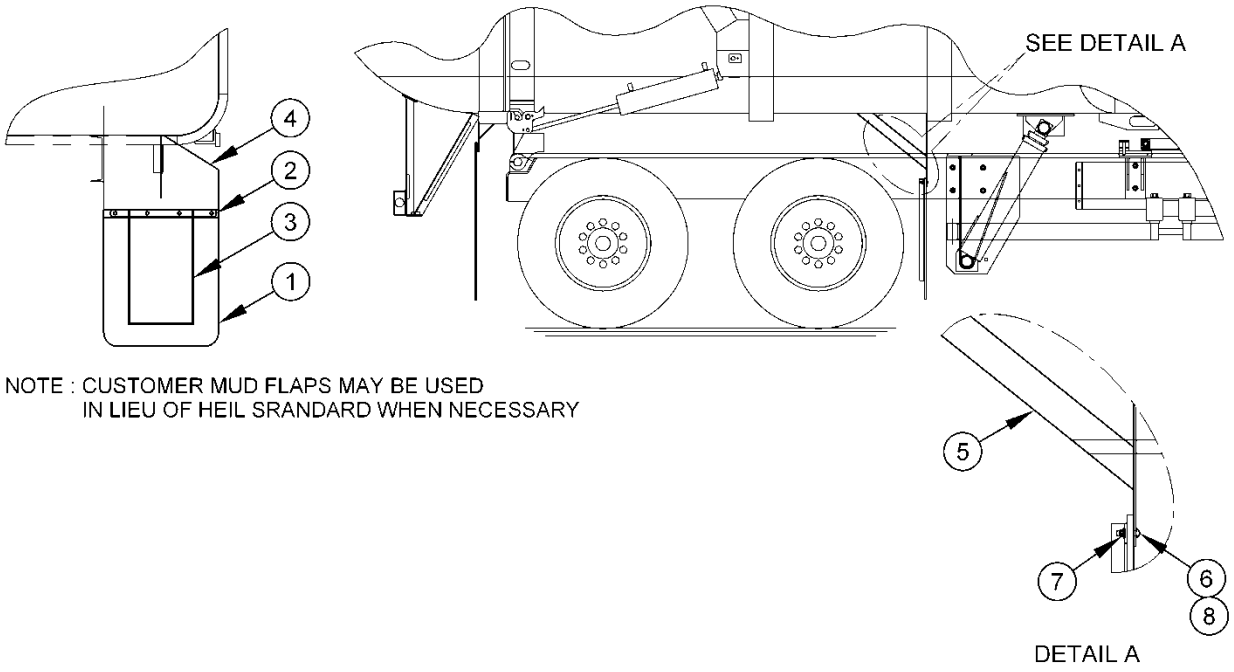
FRONT OF FENDER MUD GUARD KIT
217-1441

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	217-1441	KIT, Mud Guard, Front of Fender	-	REF
1	035-2567	GUARD, Mud, 30” (Item Welded)	-	2
2	177-3203	BRACE, Mud Guard	-	2

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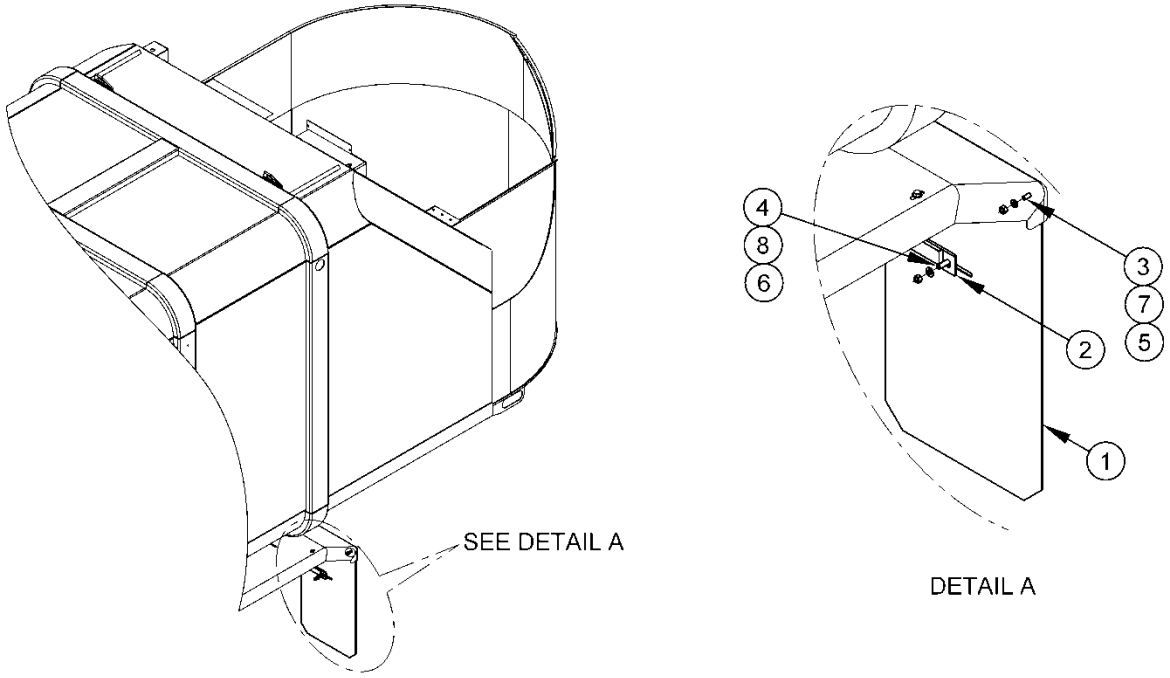
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FRONT MOUNT MUDFLAP KIT
272-6691



NOTE : CUSTOMER MUD FLAPS MAY BE USED
IN LIEU OF HEIL SRANDARD WHEN NECESSARY

STEEL BOLT-ON MUD GUARD
372-5042



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FRONT MOUNT MUDFLAP KIT
272-6691

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	272-6691	KIT, Mudflap, Front Mount	-	REF
1	035-2650	MUDFLAP, 24” x 30”	-	2
2	311-2203	PLATE, Back	-	2
3	126-3885	BRACE, Mudflap, Antisail	-	2
4	211-8237	BRACEKT, Mudflap, Front Mount	-	2
5	126-3877	BRACE, Mudflap, 7 Ga.	-	2
6	FS020924	BOLT, Carriage, 3/8” x 1-1/2"	-	8
7	FS230900	NUT, Lock, 3/8”-16, Gr. 5	-	8
8	FS520900	WASHER, Flat, 3/8” SAE, Plain	-	8

STEEL BOLT-ON MUD GUARD
372-5042

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-5042	GUARD, Mud, Bolt-On, Steel	-	REF
1	035-2796	MUDFLAP, Steel	-	2
2	126-7055	BRACE, Mud Guard, 7 Ga., HRS	-	2
3	FSP070822	HHCS, 5/16”-18 x 1-1/4”, Gr. 5, Plated	-	6
4	FSP080922	HHCS, 3/8”-16 x 1-1/4”, Gr. 8, Plated	-	4
5	FSP230800	NUT, Lock, 5/16”-18, Gr. 5, Plated	-	6
6	FSP230900	NUT, Lock, 3/8”-16, Gr. 5, Plated	-	4
7	FSP520800	WASHER, Flat, 5/16”, SAE, Plain	-	12
8	FSP520900	WASHER, Flat, 3/8’’, SAE, Plain	-	8

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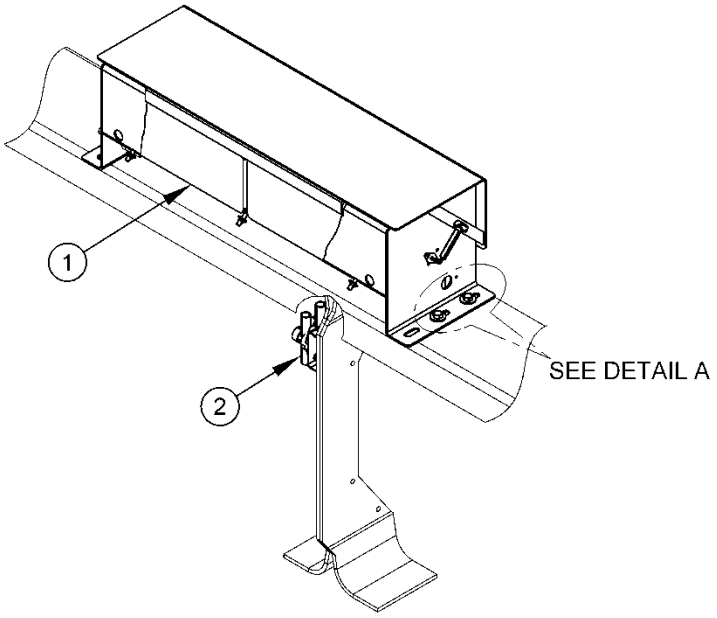
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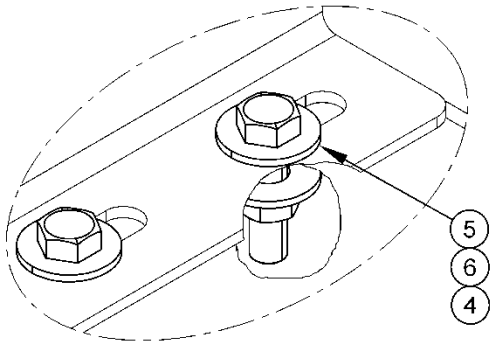
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2-BATTERY BOX MOUNT KIT

372-5140-002





DETAIL A

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2-BATTERY BOX MOUNT KIT

372-5140-002

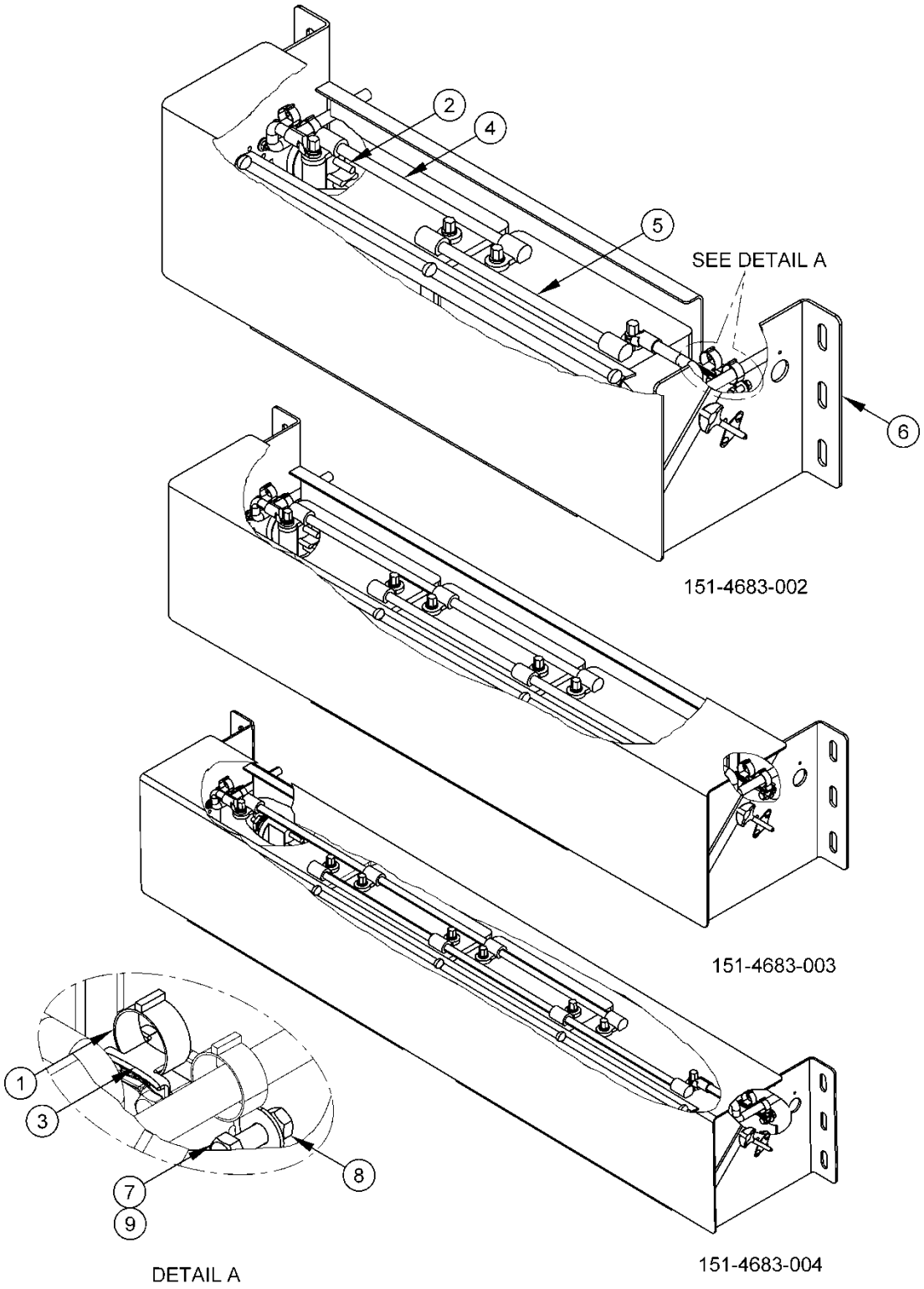
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-5140-002	KIT, Mount, 2 Battery Box	-	REF
1	151-4683-002	ASSEMBLY, 2-Battery Box (See Pg. 7161)	-	1
2	372-5141	KIT, Stud, Battery, Isolated (See Pg. 7171)	-	1
-3	701-8038	SCHEMATIC, Battery, Connection (See SM 10)	-	1
4	FSP231100	NUT, Lock, 1/2”-13, Gr. 5, Plated	-	4
5	FSP511100	WASHER, Flat, 1/2" Std., Plated	-	8
6	FSP071130	HHCS, 1/2”-13 x 2”, Gr. 5, Plated	-	4

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BATTERY BOX ASSEMBLY

151-4683-002, 151-4683-003, 151-4683-004



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BATTERY BOX ASSEMBLY

151-4683-002, 151-4683-003, 151-4683-004

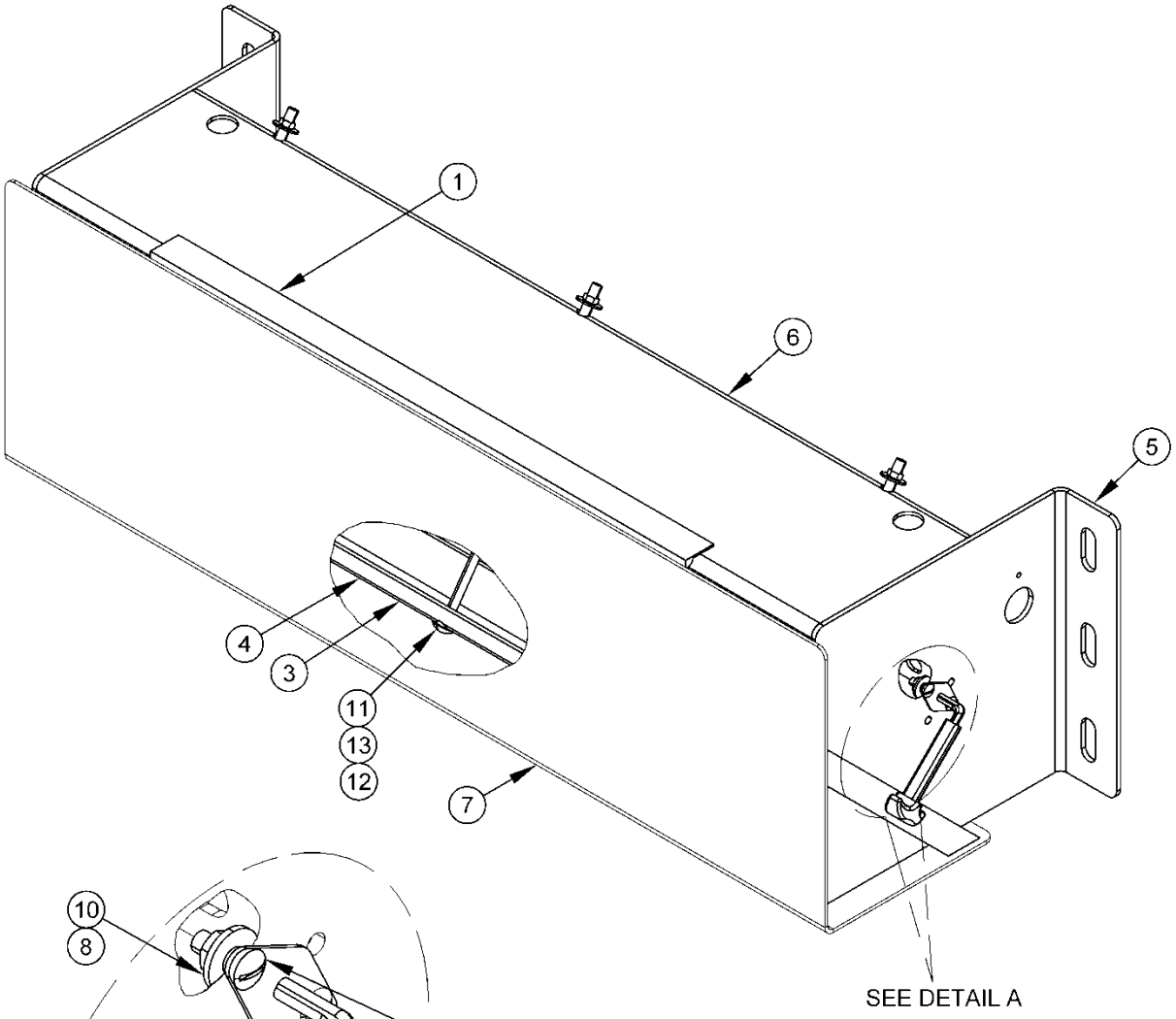
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	151-4683-002	ASSEMBLY, 2-Battery Box	A	REF
-	151-4683-003	ASSEMBLY, 3-Battery Box	B	REF
-	151-4683-004	ASSEMBLY, 4-Battery Box	C	REF
1	036-1925	STRAP, Tie, Heavy Duty, 250 Lbs	-	4
2	108-8123	DISCONNECT, Battery	-	1
3	108-8412	MOUNT, Saddle, Tie Strap	-	4
4	108-8413-102	CABLE, Battery, Positive	A	1
-4a	108-8413-103	CABLE, Battery, Positive	B	1
-4b	108-8413-104	CABLE, Battery, Positive	C	1
5	108-8413-202	CABLE, Battery, Negative	A	1
-5a	108-8413-203	CABLE, Battery, Negative	B	1
-5b	108-8413-204	CABLE, Battery, Negative	C	1
6	151-4682-002	WELDMENT, 2-Battery Box (See Pg. 7163)	A	1
-6a	151-4682-003	WELDMENT, 3-Battery Box (See Pg. 7165)	B	1
-6b	151-4682-004	WELDMENT, 4-Battery Box (See Pg. 7167)	C	1
7	FSP070820	HHCS, 5/16”-18 x 1”, Gr. 5, Plated	-	4
8	FSP230800	NUT, Lock, 5/16”-18, Gr. 5, Plated	-	4
9	FSP520800	WASHER, Flat, 5/16”, SAE, Plain	-	4

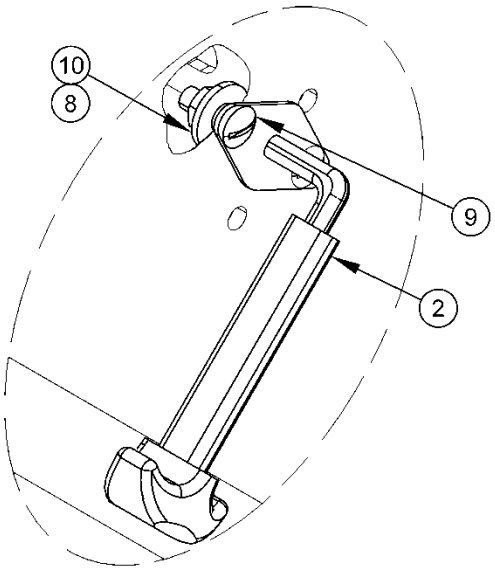
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2-BATTERY BOX WELDMENT

151-4682-002





DETAIL A

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2-BATTERY BOX WELDMENT

151-4682-002

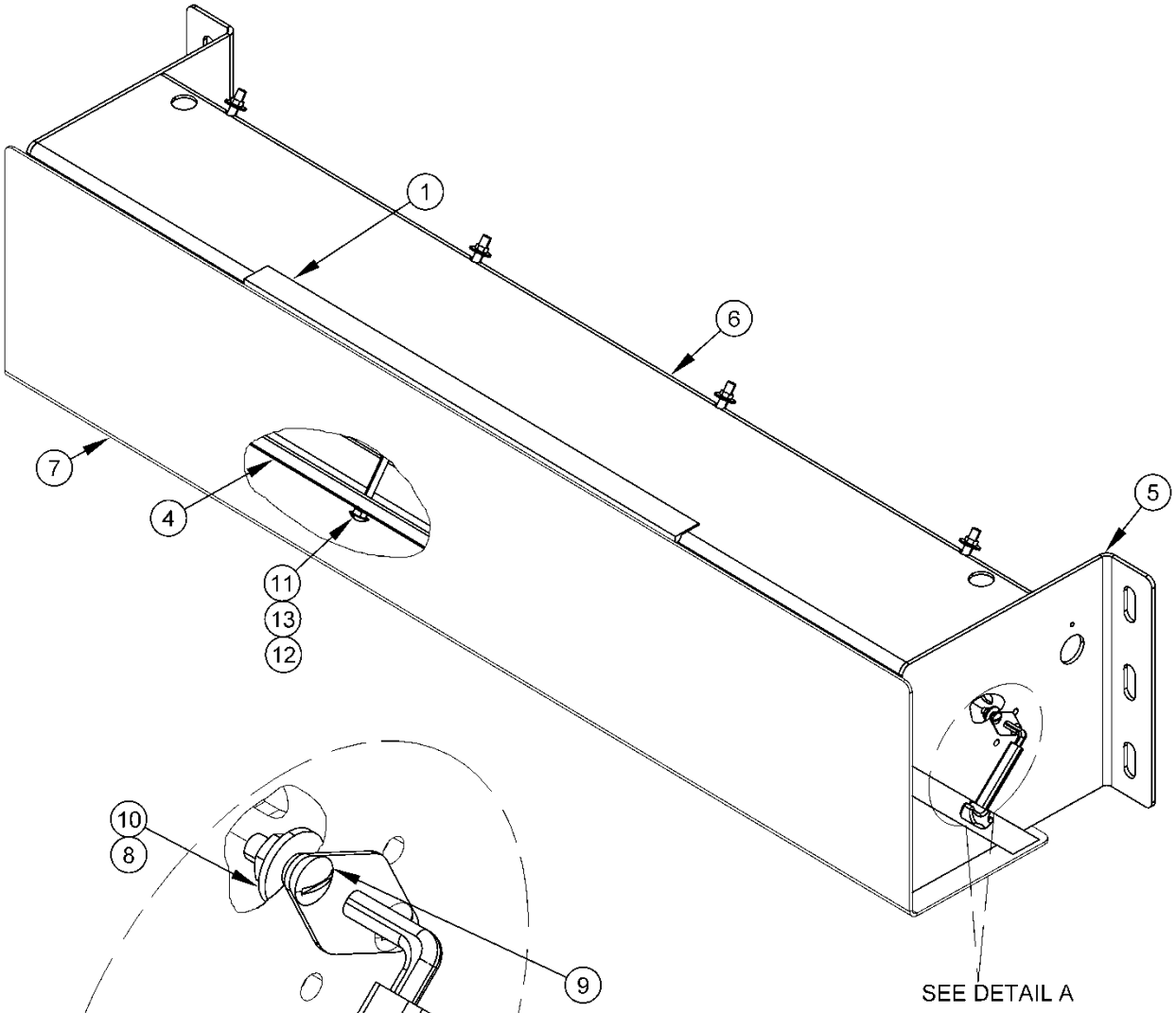
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	151-4682-002	WELDMENT, 2-Battery Box	-	REF
1	005-4115	HINGE, Battery Box	-	1
2	053-2016	LATCH, Battery Box	-	2
3	112-9955	ANGLE, Battery, Hold Down	-	1
4	112-9957	COVER, Brace, Battery Box	-	2
5	113-2731	SHEET, Battery Box, Side	-	2
6	113-6410-002	BASE, Battery Box	-	1
7	113-6411-002	COVER, Battery Box	-	1
8	FS230700	NUT, Lock, 1/4”-20, Gr. 5	-	4
9	FS410715	SCREW, 1/4” x 3/4”	-	4
10	FS510700	WASHER, Flat, 1/4”, Std., Plain	-	4
11	FSP020899	BOLT, Carriage, 5/16” x 12	-	3
12	FSP230800	NUT, Lock, 5/16”-18, Gr. 5, Plated	-	3
13	FSP520800	WASHER, Flat, 5/16”, SAE, Plain	-	3

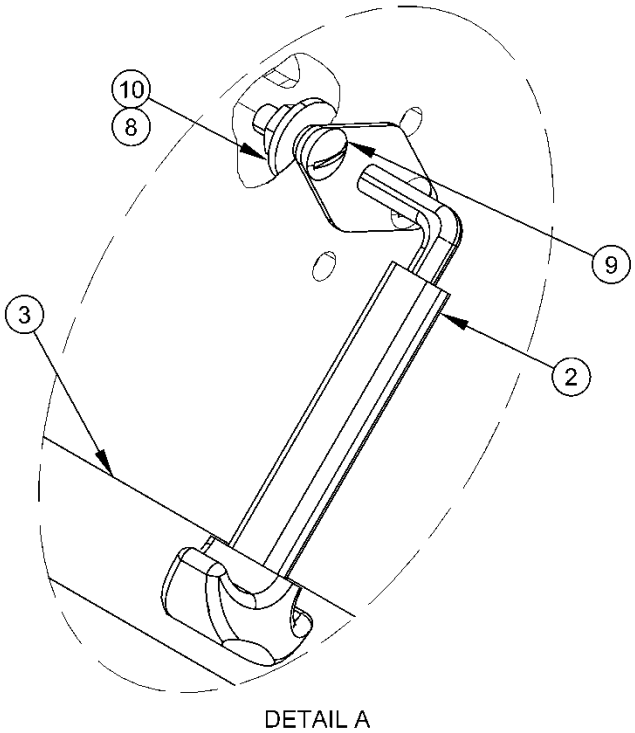
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3-BATTERY BOX WELDMENT

151-4682-003





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3-BATTERY BOX WELDMENT

151-4682-003

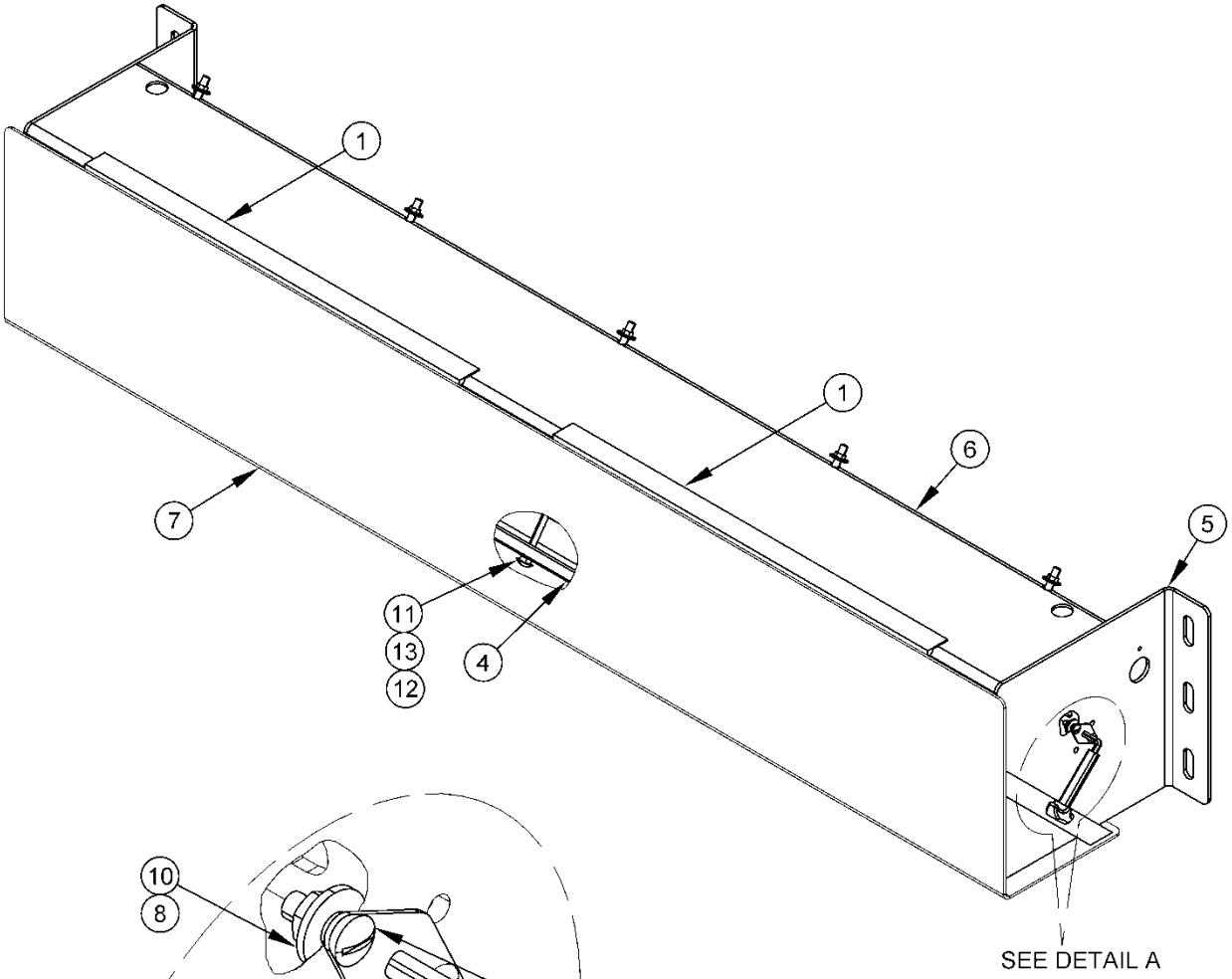
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	151-4682-003	WELDMENT, 3-Battery Box	-	REF
1	005-4115	HINGE, Battery Box	-	1
2	053-2016	LATCH, Battery Box	-	2
3	112-9957	COVER, Brace, Battery Box	-	2
4	112-9959	ANGLE, Battery, Hold Down	-	1
5	113-2731	SHEET, Battery Box, Side	-	2
6	113-6410-003	BASE, Battery Box	-	1
7	113-6411-003	COVER, Battery Box	-	1
8	FS230700	NUT, Lock, 1/4”-20, Gr. 5	-	4
9	FS410715	SCREW, 1/4” x 3/4”	-	4
10	FS510700	WASHER, Flat, 1/4”, Std., Plain	-	4
11	FSP020899	BOLT, Carriage, 5/16” x 12	-	4
12	FSP230800	NUT, Lock, 5/16”-18, Gr. 5, Plated	-	4
13	FSP520800	WASHER, Flat, 5/16”, SAE, Plain	-	4

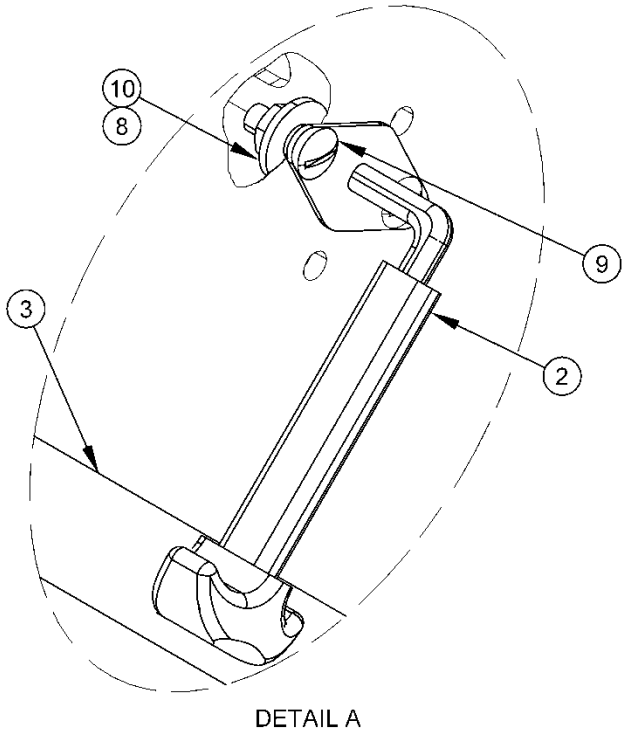
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4-BATTERY BOX WELDMENT

151-4682-004





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4-BATTERY BOX WELDMENT

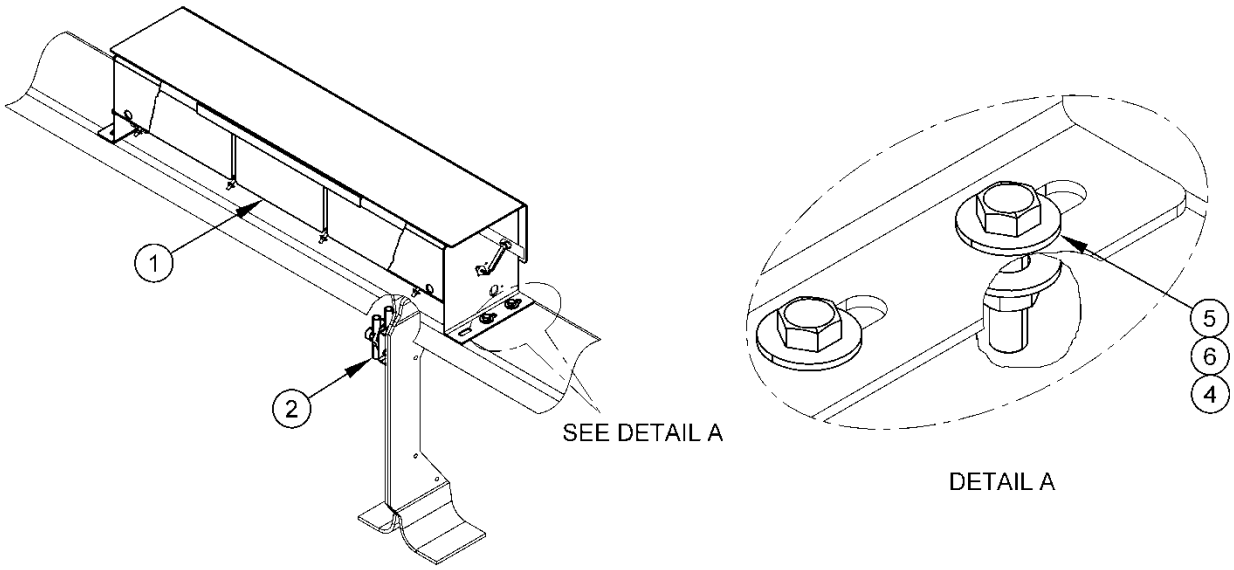
151-4682-004

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	151-4682-004	WELDMENT, 4-Battery Box	-	REF
1	005-4115	HINGE, Battery Box	-	2
2	053-2016	LATCH, Battery Box	-	2
3	112-9957	COVER, Brace, Battery Box	-	2
4	112-9962	ANGLE, Battery, Hold Down	-	1
5	113-2731	SHEET, Battery Box, Side	-	2
6	113-6410-004	BASE, Battery Box	-	1
7	113-6411-004	COVER, Battery Box	-	1
8	FS230700	NUT, Lock, 1/4”-20, Gr. 5	-	4
9	FS410715	SCREW, 1/4” x 3/4”	-	4
10	FS510700	WASHER, Flat, 1/4”, Std., Plain	-	4
11	FSP020899	BOLT, Carriage, 5/16” x 12	-	5
12	FSP230800	NUT, Lock, 5/16”-18, Gr. 5, Plated	-	5
13	FSP520800	WASHER, Flat, 5/16”, SAE, Plain	-	5

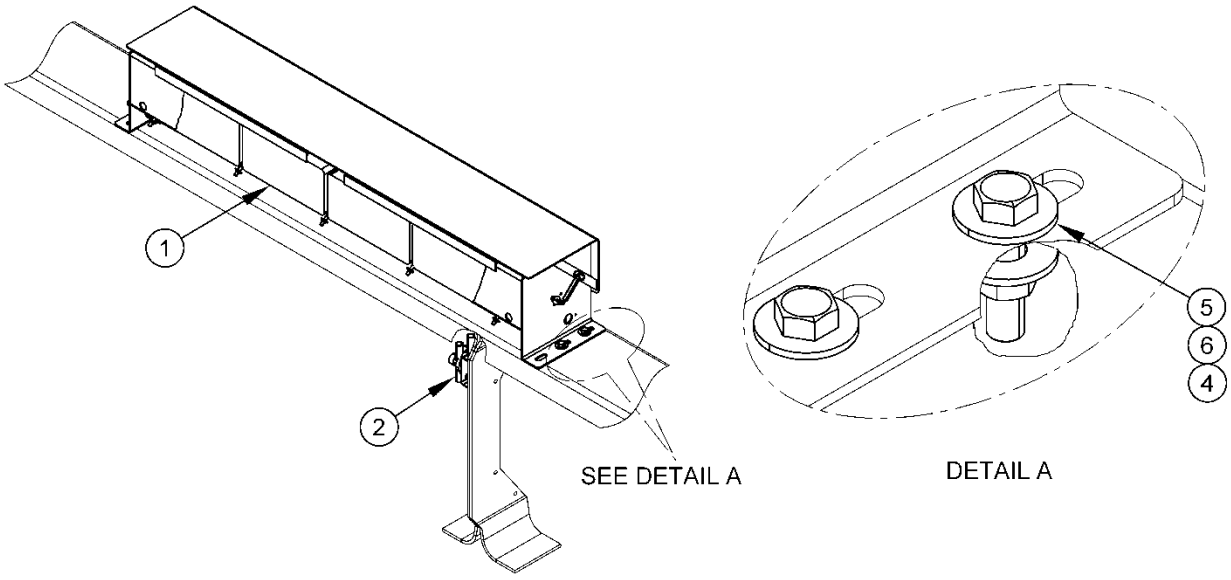
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3-BATTERY BOX MOUNT KIT
372-5140-003



4-BATTERY BOX MOUNT KIT
372-5140-004



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3-BATTERY BOX MOUNT KIT
372-5140-003

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-5140-003	KIT, Mount, 3 Battery Box	-	REF
1	151-4683-003	ASSEMBLY, 3-Battery Box (See Pg. 7161)	-	1
2	372-5141	KIT, Stud, Battery, Isolated (See Pg. 7171)	-	1
-3	701-8038	SCHEMATIC, Battery, Connection (See SM 10)	-	1
4	FSP231100	NUT, Lock, 1/2”-13, Gr. 5, Plated	-	4
5	FSP511100	WASHER, Flat, 1/2" Std., Plated	-	8
6	FSP071130	HHCS, 1/2”-13 x 2”, Gr. 5, Plated	-	4

4-BATTERY BOX MOUNT KIT
372-5140-004

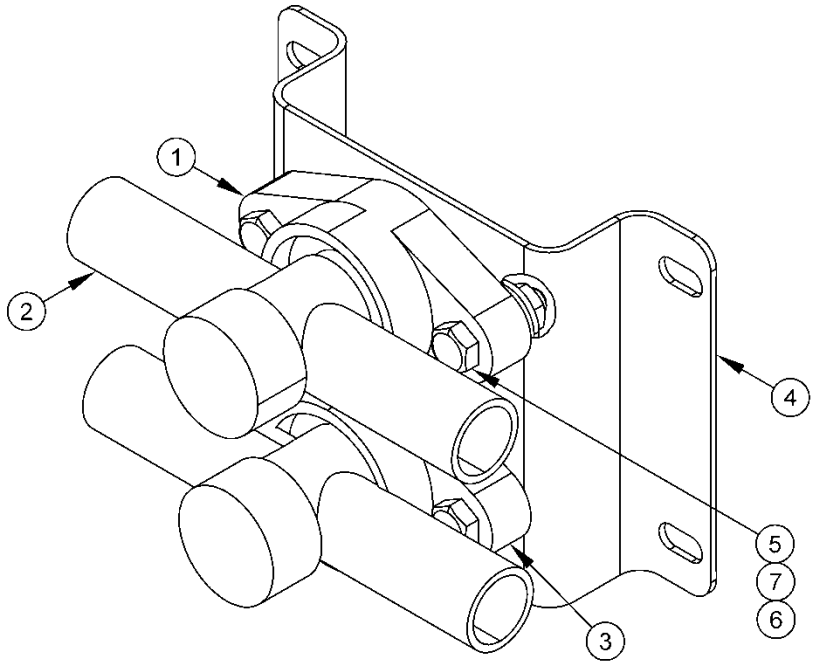
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-5140-004	KIT, Battery Box, Mount, 4 Battery	-	REF
1	151-4683-004	ASSEMBLY, 4-Battery Box (See Pg. 7161)	-	1
2	372-5141	KIT, Stud, Battery, Isolated (See Pg. 7171)	-	1
-3	701-8038	SCHEMATIC, Battery, Connection (See SM 10)	-	1
4	FSP231100	NUT, Lock, 1/2”-13, Gr. 5, Plated	-	4
5	FSP511100	WASHER, Flat, 1/2" Std., Plated	-	8
6	FSP071130	HHCS, 1/2”-13 x 2”, Gr. 5, Plated	-	4

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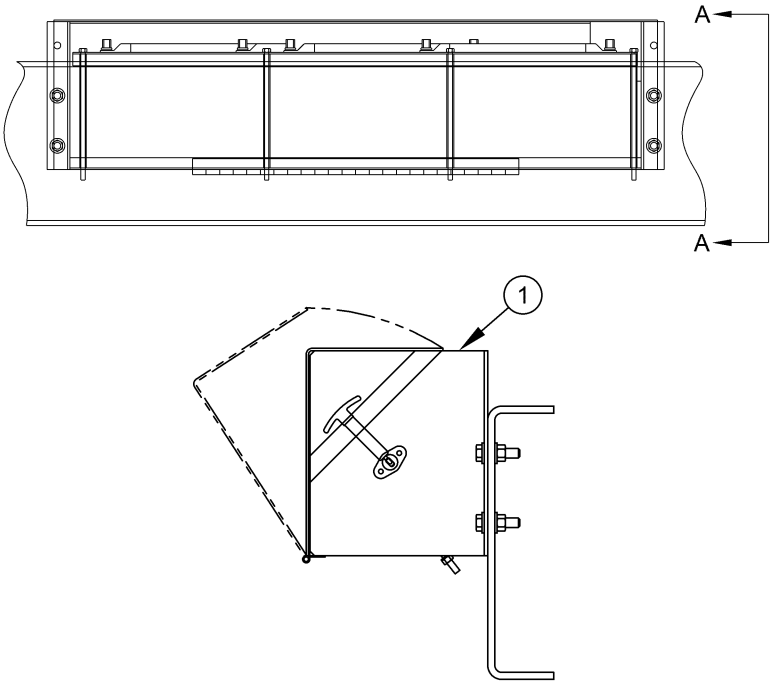
ISOLATED BATTERY STUD KIT

372-5141



3-BATTERY BOX MOUNT KIT

272-7844-003



VIEW A A

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ISOLATED BATTERY STUD KIT

372-5141

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-5141	KIT, Stud, Battery, Isolated	-	REF
1	108-8414-001	STUD, Battery Isolated, Red	-	1
2	108-8414-002	COVER, Stud, Battery, Isolated	-	2
3	108-8414-003	STUD, Battery, Isolated, Black	-	1
4	311-4572	BRACKET, Battery, Studs, Mounting	-	1
5	FSP070720	HHCS, 1/4''-20 x 1”, Gr. 5, Plated	-	4
6	FSP230700	NUT, Lock, 1/4”-20, Gr. 5, Plated	-	4
7	FSP510700	WASHER, Flat, 1/4'' Std., Plated	-	4

3-BATTERY BOX MOUNT KIT

272-7844-003

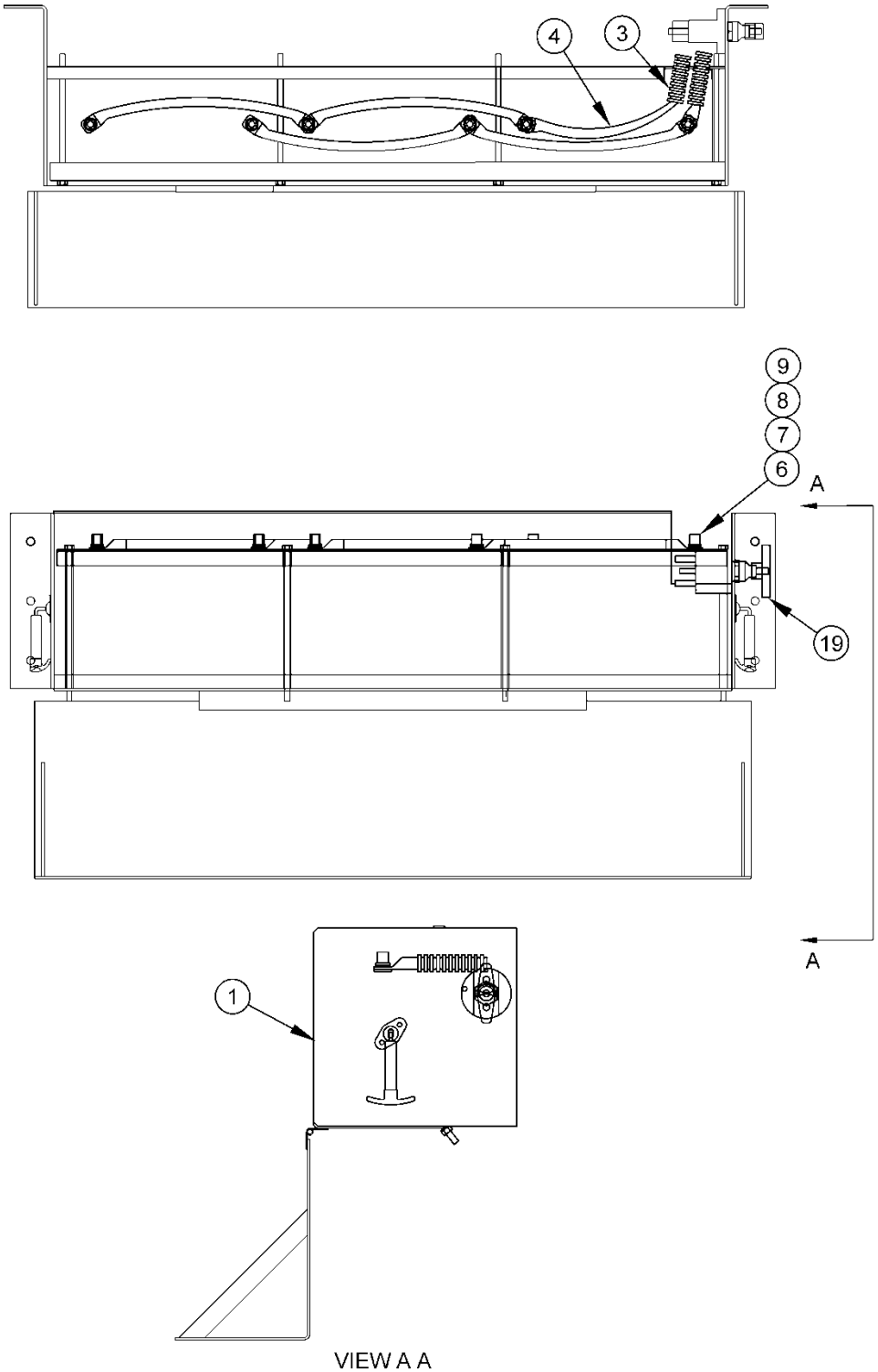
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	272-7844-003	KIT, Mount, 3-Battery Box	-	REF
1	151-4296	ASSEMBLY, 3-Battery Box (See Pg. 7167)	-	1
-2	FS071130	HHCS, 1/2''-13 x 2”, Gr. 5	-	4
-3	FS231110	NUT, Lock, 1/2”-13 x 7/16”, Gr. 5	-	4
-4	FS511100	WASHER, Flat, 1/2” Std., Plain	-	8
-5	701-8038	SCHEMATIC, Battery, Connection (See SM 10)	-	1

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3-BATTERY BOX ASSEMBLY

151-4296



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3-BATTERY BOX ASSEMBLY

151-4296

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	151-4296	ASSEMBLY, 3-Battery Box	-	REF
1	151-4644-003	WELDMENT, 3-Battery Box (See Pg. 7175)	-	1
-2	NA		-	-
3	108-5034-004	LOOM, Convoluted, 5/8”	-	10’
4	108-5478-301	CABLE, Battery, 3/0 Ga.	-	10’
-5	108-5478-302	UNION, Battery Cable, 3/0 Ga.		2
6	108-5478-304	TERMINAL, Battery, 3/0 Ga.		12
7	108-5478-306	TUBING, Shrink, Black, 3/0 Ga.	-	5
8	108-5478-307	TUBING, Shrink, Red, 3/0 Ga.	-	5
9	108-5707	CAPNUT, Battery Post	-	6
-15	701-8038	SCHEMATIC, Battery, Connection (See SM 10)	-	1
19	108-8123	DISCONNECT, Battery	-	1

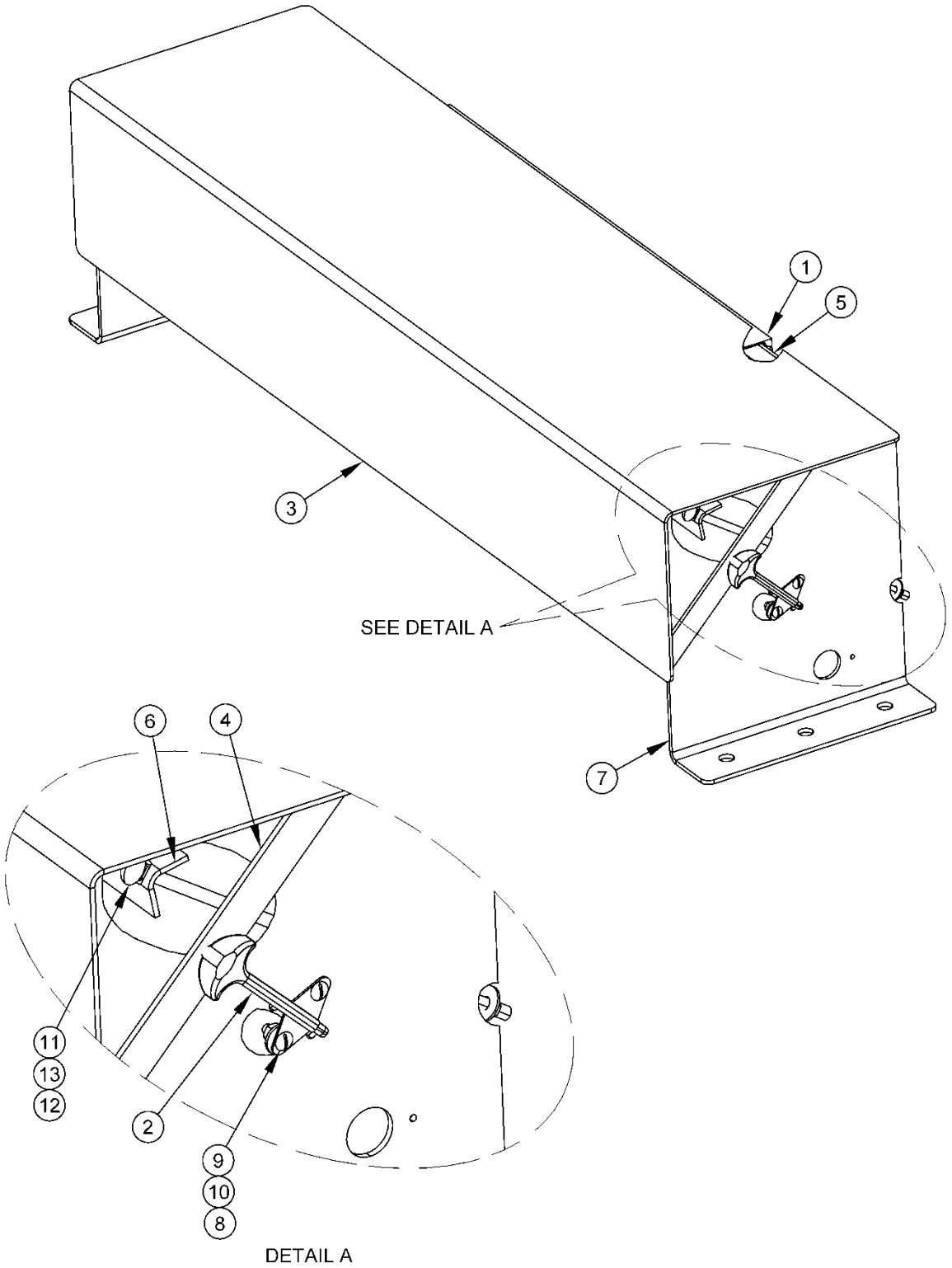
Note: Items 10-14 and 16-18 are not available.

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3-BATTERY BOX WELDMENT

151-4644-003



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3-BATTERY BOX WELDMENT

151-4644-003

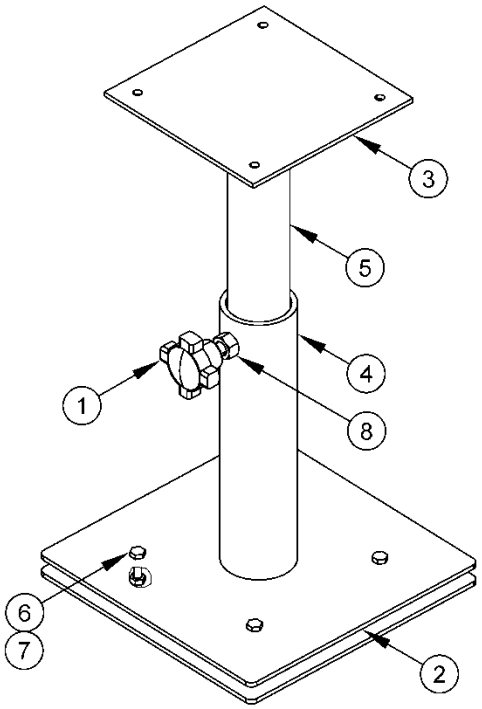
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	151-4644-003	WELDMENT, 3-Battery Box	-	REF
1	005-4115	HINGE, Battery Box	-	1
2	053-2016	LATCH, Battery Box	-	2
3	112-9948	COVER, Battery Box	-	1
4	112-9957	COVER, Brace, Battery Box	-	2
5	112-9958	BASE, Battery Box	-	1
6	112-9959	ANGLE, Battery, Hold Down	-	1
7	113-2731	SHEET, Battery Box, Side	-	2
8	FS230700	NUT, Lock, 1/4”-20, Gr. 5	-	4
9	FS410715	SCREW, 1/4” x 3/4”	-	4
10	FS510700	WASHER, Flat, 1/4”, Std., Plain	-	4
11	FSP020899	BOLT, Carriage, 5/16” x 12	-	4
12	FSP230800	NUT, Lock, 5/16”-18, Gr. 5, Plated	-	4
13	FSP520800	WASHER, Flat, 5/16”, SAE, Plain	-	4

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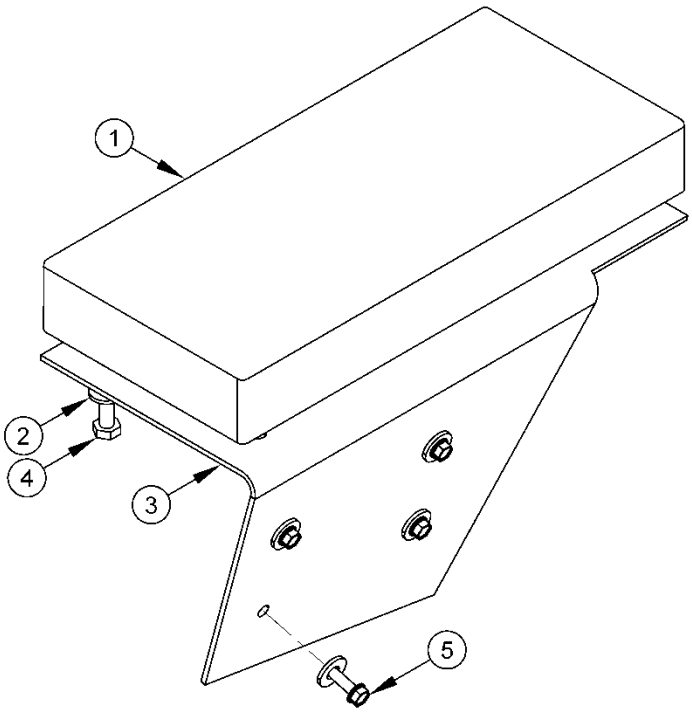
CONTROL BOX TABLE ASSEMBLY

372-0513



PETE ARM REST KIT

372-1652



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CONTROL BOX TABLE ASSEMBLY

372-0513

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-0513	ASSEMBLY, Table, Control Box	-	REF
1	047-2520	KNOB, Hand	-	1
2	177-4937-001	CONSOLE, Control Box, Base	-	2
3	177-4937-002	TABLE, Control Box, Top/Bottom Plate	-	1
4	177-4937-003	CONSOLE, Riser Tube	-	1
5	177-4937-004	TABLE, Control Box, Riser Tube Top	-	1
6	FS070724	HHCS, 1/4"-20 x 1-1/2”, Gr. 5	-	4
7	FS230700	NUT, Lock, 1/4”-20, Gr. 5	-	4
8	FS281100	NUT, Hex, 1/2”-13	-	1

PETE ARM REST KIT

372-1652

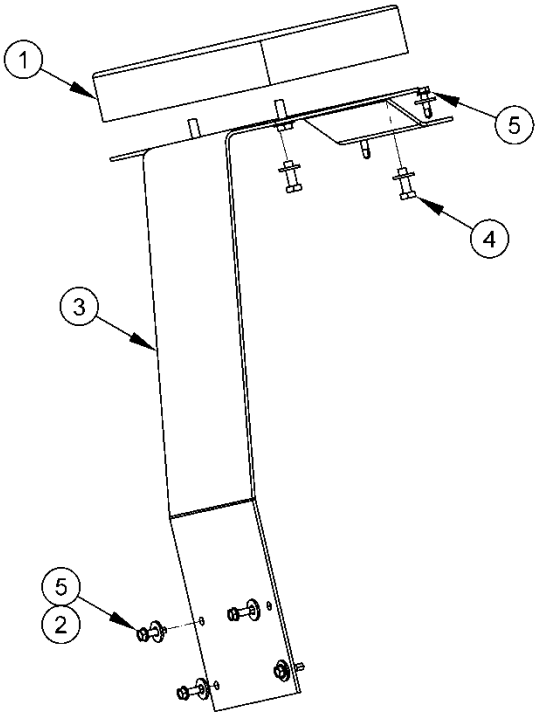
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-1652	KIT, Arm Rest, Pete	-	REF
1	014-1859-001	PAD, Arm Rest	-	1
2	055-1391-001	WASHER, Steel, Hardened, 1/4" x 0.8” Thickness, Zinc, Plated	-	8
3	311-2619	BRACKET, Arm Rest	-	1
4	FS070715	HHCS, 1/4”-20 x 3/4”, Gr. 5	-	4
5	FS500450	SCREW, Tek, #10 x 4"	-	4

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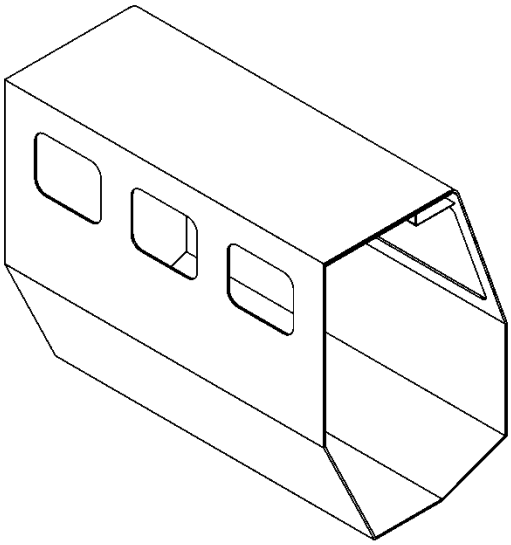
CONDOR/STERLING ARM REST KIT

372-1653



CCC CS CAB CONTROL KIT

372-3634



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CONDOR/STERLING ARM REST KIT
372-1653

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-1653	KIT, Arm Rest, Condor/Sterling	-	REF
1	014-1859-001	PAD, Arm Rest	-	1
2	055-1391-001	WASHER, Steel, Hardened, 1/4" x 0.8” Thickness, Zinc, Plated	-	10
3	311-2624	BRACKET, Arm Rest	-	1
4	FS070715	HHCS, 1/4”-20 x 3/4”, Gr. 5	-	4
5	FS500450	SCREW, Tek, #10 x 4"	-	6

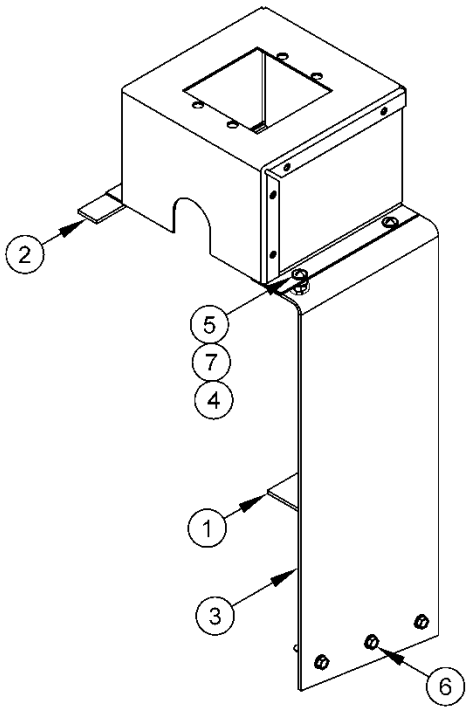
CCC CS CAB CONTROL KIT
372-3634

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-3634	KIT, Control, Cab, CS, CCC	-	REF

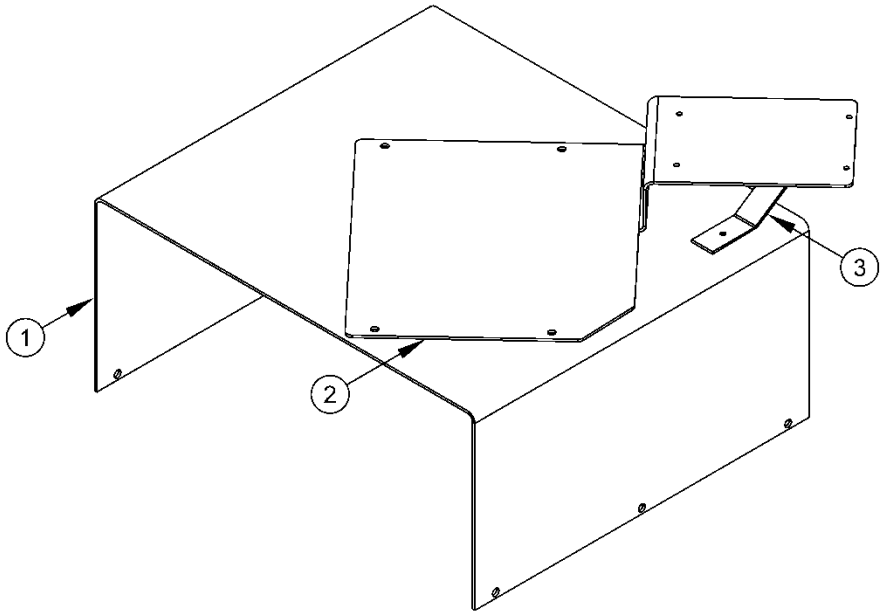
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JOYSTICK MOUNTING BRACKET KIT
372-1592



JOYSTICK CONTROL BOX CONSOLE ASSEMBLY
372-1749



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JOYSTICK MOUNTING BRACKET KIT
372-1592

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-1592	KIT, Bracket, Mtg., Joystick	-	REF
1	234-2127	PLATE, Support	-	1
2	234-2128	PLATE, Washer	-	1
3	311-2584	BRACKET, Joystick Mount	-	1
4	FS230300	NUT, Lock, 7/64”-32, Gr. 5	-	4
5	FS420315	SCREW, Mach., Rd. Hd., 7/64”-32 x 3/4"	-	4
6	FS500420	SCREW, Tek, 1/8” x 1”	-	3
7	FS510300	WASHER, Flat, Std., Plain, 7/64”	-	8

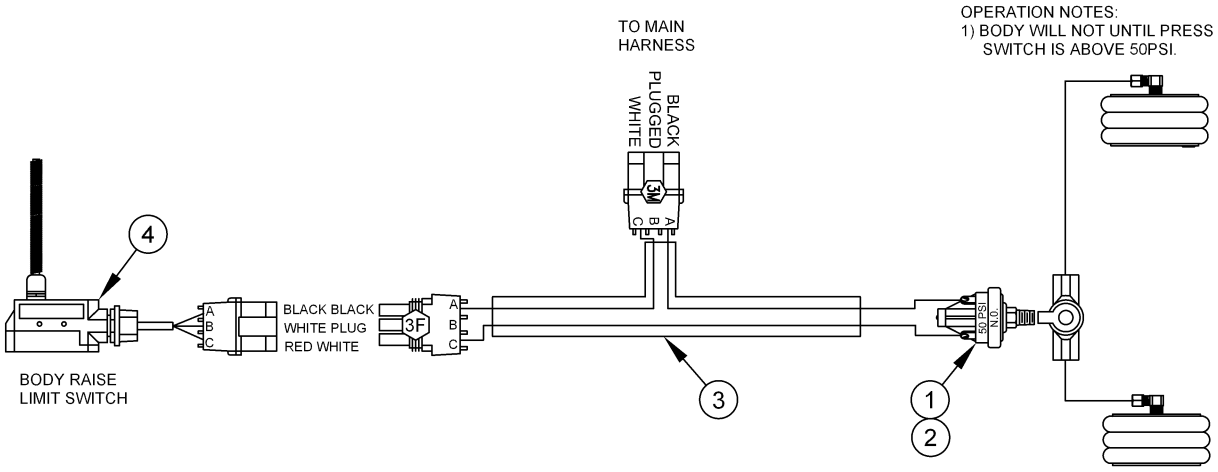
JOYSTICK CONTROL BOX CONSOLE ASSEMBLY
372-1749

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-1749	ASSEMBLY, Console, Control Box, Joystick	-	REF
1	311-2705	BRACKET, Console	-	1
2	311-2706	BRACKET, Console	-	1
3	311-2707	BRCAKET, Console, Stiffener	-	1

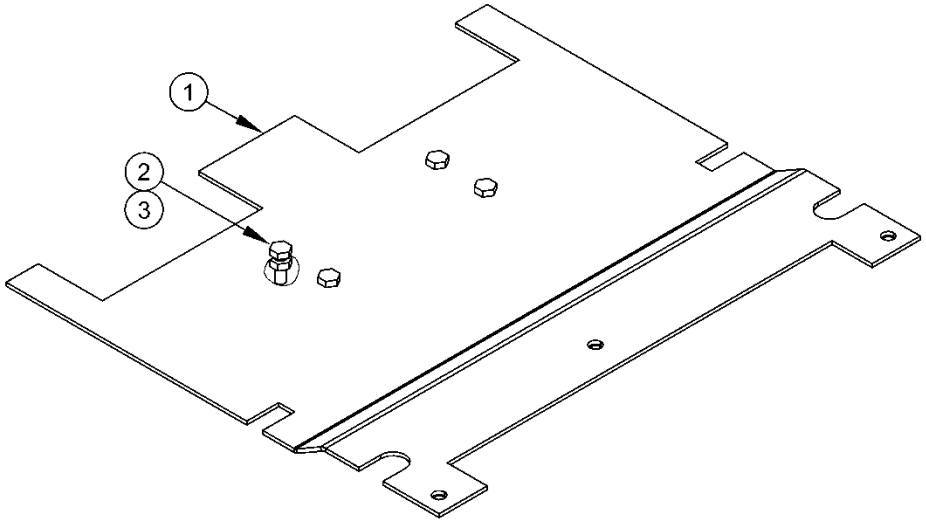
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BODY-UP INTERLOCK KIT
372-2006



AUTOCAR INTEC MONITOR MOUNT KIT
372-3621



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BODY-UP INTERLOCK KIT
372-2006

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-2006	KIT, Interlock, Body-Up	-	REF
1	108-6842	SWITCH, Pressure, SPST, 50 PSI	-	1
2	108-2050	DISCONNECT, Quick, Terminal, w/Heat Shrink, Female	-	2
3	263-1153	HARNESS, Body Raise, Interlock (See SM 10)	-	1
4	108-5031	SWITCH, Limit	-	REF
-5	212-2405	DECAL, Axle Warning	-	1

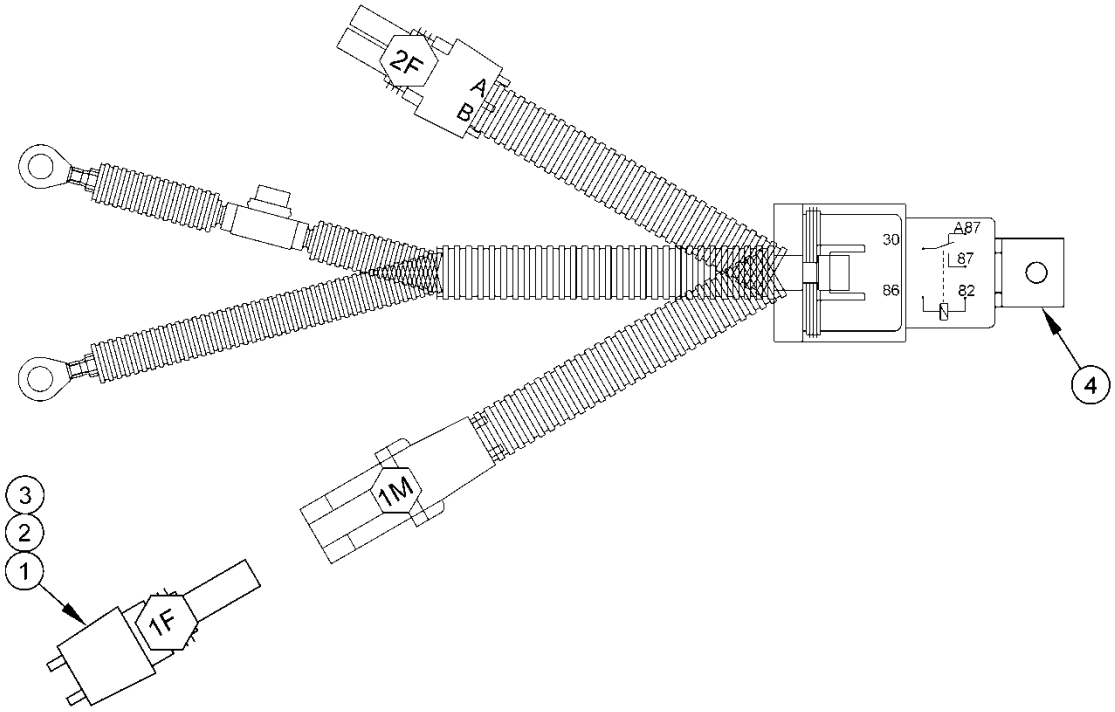
AUTOCAR INTEC MONITOR MOUNT KIT
372-3621

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-3621	KIT, Mount, Monitor, Intec, Autocar	-	REF
1	311-2716	BRACKET, Monitor, Intec	-	1
2	FS070715	HHCS, 1/4”-20 x 3/4”, Gr. 5	-	4
3	FS230700	NUT, Lock, 1/4”-20, Gr. 5	-	7

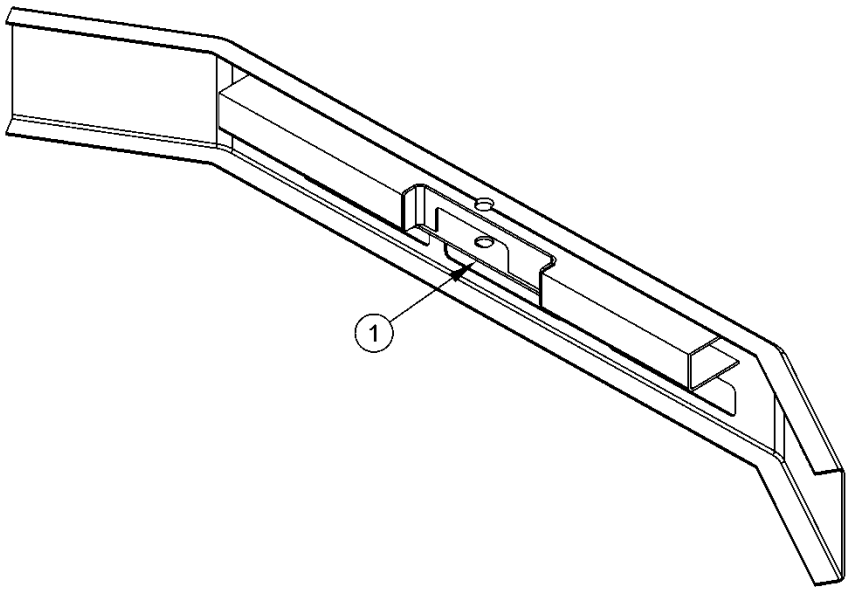
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PETERBILT REVERSE SIGNAL KIT
372-5676



MACK MRU TANDEM PUMP BUMPER MODIFICATION KIT
372-5952



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PETERBILT REVERSE SIGNAL KIT
372-5676

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-5676	KIT, Signal, Reverse, Peterbilt	-	REF
1	108-4827-001	CONNECTOR, Male, 1 Way, Packard	-	1
2	108-4827-121	TERMINAL, Female, 16-14 AWG, Packard	-	1
3	108-4827-132	SEAL, Cable, 16-14 AWG	-	1
4	263-1541	HARNESS, Relay, Reverse Signal (See SM 10)	-	1

MACK MRU TANDEM PUMP BUMPER MODIFICATION KIT
372-5952

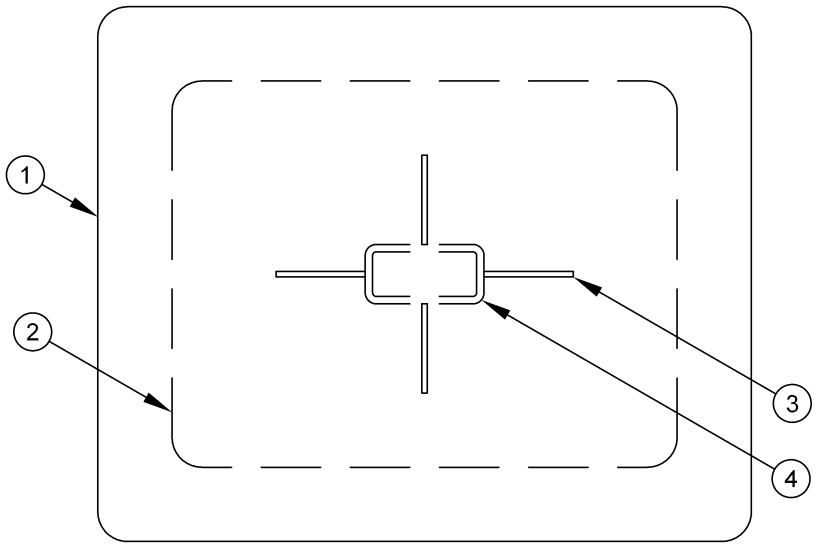
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-5952	KIT, Bumper Modification, Tandem Pump, Mack MRU	-	REF
1	113-6553	ENCLOSURE, Tow Hook	-	1

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PEDESTAL CAB CONTROLS

177-3817



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PEDESTAL CAB CONTROLS

177-3817

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	177-3817	CONTROLS, Cab, Pedestal	-	REF
1	177-3817-001	PLATE, Top, 7 Ga., HRS	-	1
2	177-3817-002	PLATE, Bottom, 7 Ga., HRS	-	1
3	177-3817-003	PLATE, Reinforcing, 7 Ga., HRS	-	4
4	177-3817-004	POST, Vertical, 1/4" x 2” x 4”	-	1

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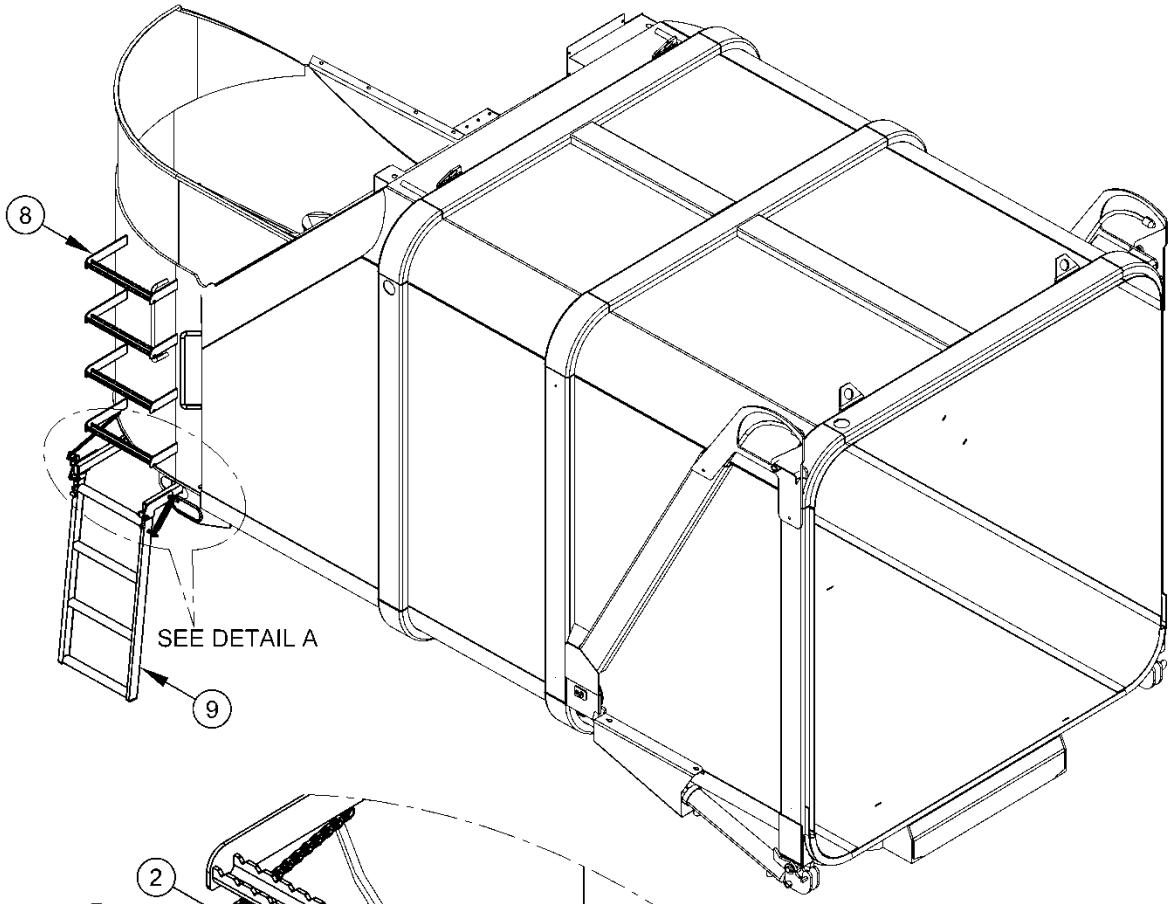
BODY/LOADER OPTION KITS

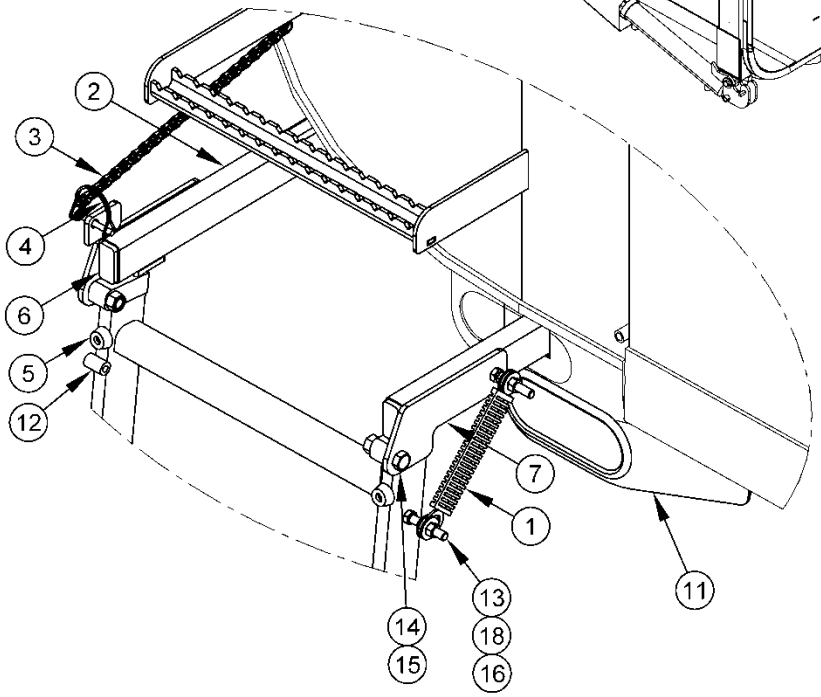
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HOPPER FOLDING LADDER KIT

121-2521





DETAIL A

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HOPPER FOLDING LADDER KIT

121-2521

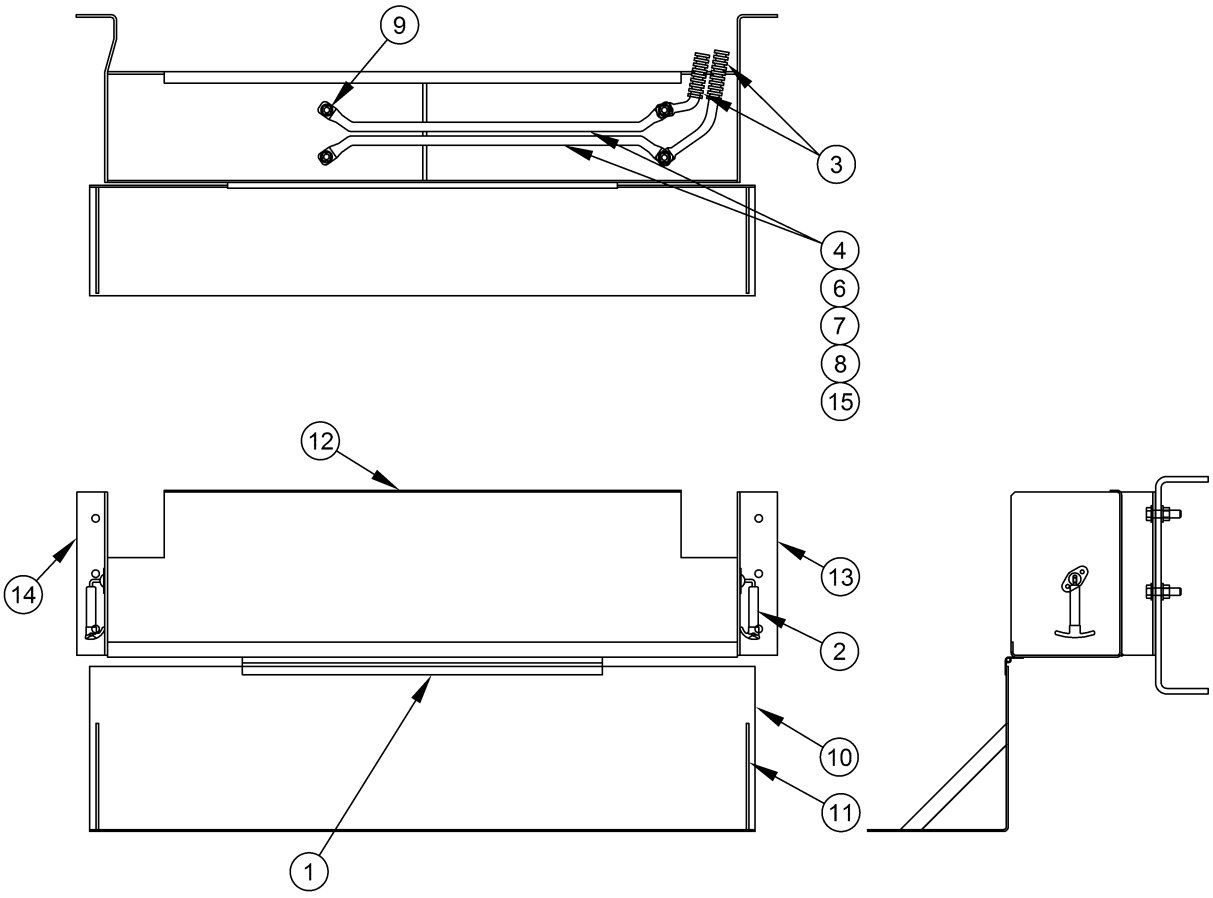
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	121-2521	KIT, Ladder, Folding, Hopper	-	REF
1	019-1095	SPRING, 1" OD x 6"	-	1
2	021-4345	MOUNT, Ladder, Folding, Hopper	-	2
3	043-0277-008	CHAIN, 50', Zinc Plated, Sash	-	1
4	048-7220	PIN, Lock, Round Loop Wire	-	1
5	080-1584-011	BUMPER, Rubber	-	2
6	121-1901-002	CAP, Tube, Lower Ladder	-	4
7	121-2521-001	PLATE, Pivot, Folding Ladder	-	2
8	121-2522	WELDMENT, Ladder Rung	-	4
9	121-2523	LADDER, Lower, 4 Rung	-	1
10	234-1982	PLATE, Tailgate Prop	-	1
11	311-3636	BRACKET, Turn Light, Side	-	1
12	354-2102	TUBE, Pin, Retainer	-	1
13	FS070930	HHCS, 3/8"-16 x 2", Gr. 5	-	1
14	FS071126	HHCS, 1/2"-13 x 1-3/4", Gr. 5	-	2
15	FS231100	NUT, Lock, 1/2"-13, Gr. 5	-	2
16	FS280900	NUT, Hex, 3/8"-16, Plain	-	4
17	FS370614	RIVETS, 3/16" x 11/16"	-	2
18	FS521100	WASHER, Flat, 1/2", SAE, Plain	-	4
-19	-	NA	-	REF
-20	-	NA	-	REF

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2-BATTERY BOX KIT

151-4613



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2-BATTERY BOX KIT

151-4613

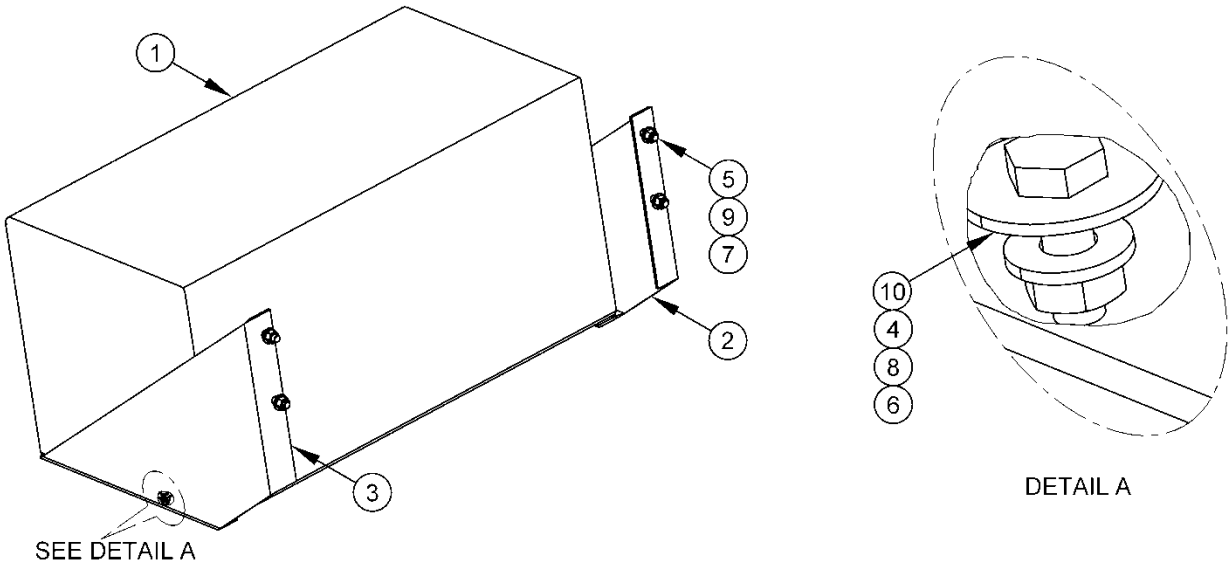
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	151-4613	KIT, 2-Battery Box	-	REF
1	005-4115	HINGE, Battery Box	-	1
2	053-2016	LATCH, Battery Box	-	2
3	108-5034-004	LOOM, Convoluted, 5/8”	-	10'
4	108-5478-301	CABLE, Battery, 3/0 Ga.	-	10'
-5	108-5478-302	UNION, Battery Cable, 3/0 Ga.	-	2
6	108-5478-304	TERMINAL, Battery, 3/0 Ga.	-	6
7	108-5478-306	TUBING, Shrink, Black, 3/0 Ga.	-	5
8	108-5478-307	TUBING, Shrink, Red, 3/0 Ga.	-	5
9	108-5707	CAPNUT, Battery Post	-	4
10	113-3467	COVER, Battery Box	-	1
11	112-9957	COVER, Brace, Battery Box	-	2
12	113-3464	COVER, Shell, Battery Box	-	1
13	113-3465	SHEET, Side, CS	-	1
14	113-3466	SHEET, Side, SS	-	1
15	701-8038	SCHEMATIC, Battery, Connection (See SM 10)	-	1
16	FSP020899	BOLT, Carriage, 5/16” x 12	-	8
17	FSP230800	NUT, Lock, 5/16”-18, Gr. 5, Plated	-	8
18	FSP520800	WASHER, Flat, 5/16”, SAE, Plain	-	8
19	FS071130	HHCS, 1/2"-13 x 2”, Gr. 5	-	4
20	FS231110	NUT, Lock, 1/2”-13 x 7/16”, Gr. 5	-	4
21	FS511100	WASHER, Flat, 1/2” Std., Plain	-	4

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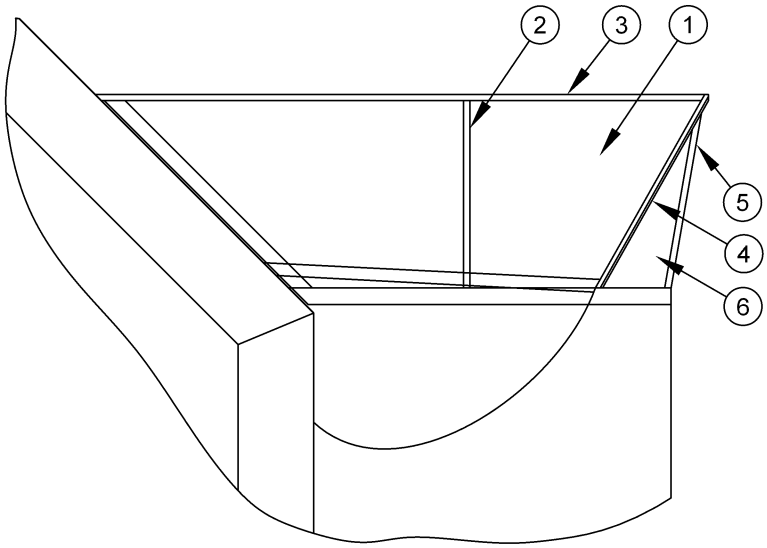
36” X 18” X 18” EJECT AND SERVICE HOIST TOOLBOX KIT

372-3234



HOPPER METAL SIDE SHEET KIT

272-6411



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36” X 18” X 18” EJECT AND SERVICE HOIST TOOLBOX KIT

372-3234

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-3234	KIT, Tool Box, Eject and SH, 36” x 18” x 18”	-	REF
1	151-1336	TOOL BOX, Delta, 36” x 18” x 18”	-	1
2	311-2200-00L	BRACKET, Left, Tool Box Mount	-	1
3	311-2200-00R	BRACKET, Right, Tool Box Mount	-	1
4	FSP070715	HHCS, 1/4”-20 x 3/4”, Gr. 5, Plated	-	8
5	FSP071124	HHCS, 1/2"-13 x 1-1/2”, Gr. 5, Plated	-	4
6	FSP230700	NUT, Lock, 1/4”-20, Gr. 5, Plated	-	8
7	FSP231100	NUT, Lock, 1/2”-13, Gr. 5, Plated	-	4
8	FSP520700	WASHER, Flat, 1/4” SAE, Plated	-	8
9	FSP521100	WASHER, Flat, 1/2", SAE, Plated	-	8
10	FSP530720	WASHER, Fender, 1/4" x 1”, Plated	-	8

HOPPER METAL SIDE SHEET KIT

272-6411

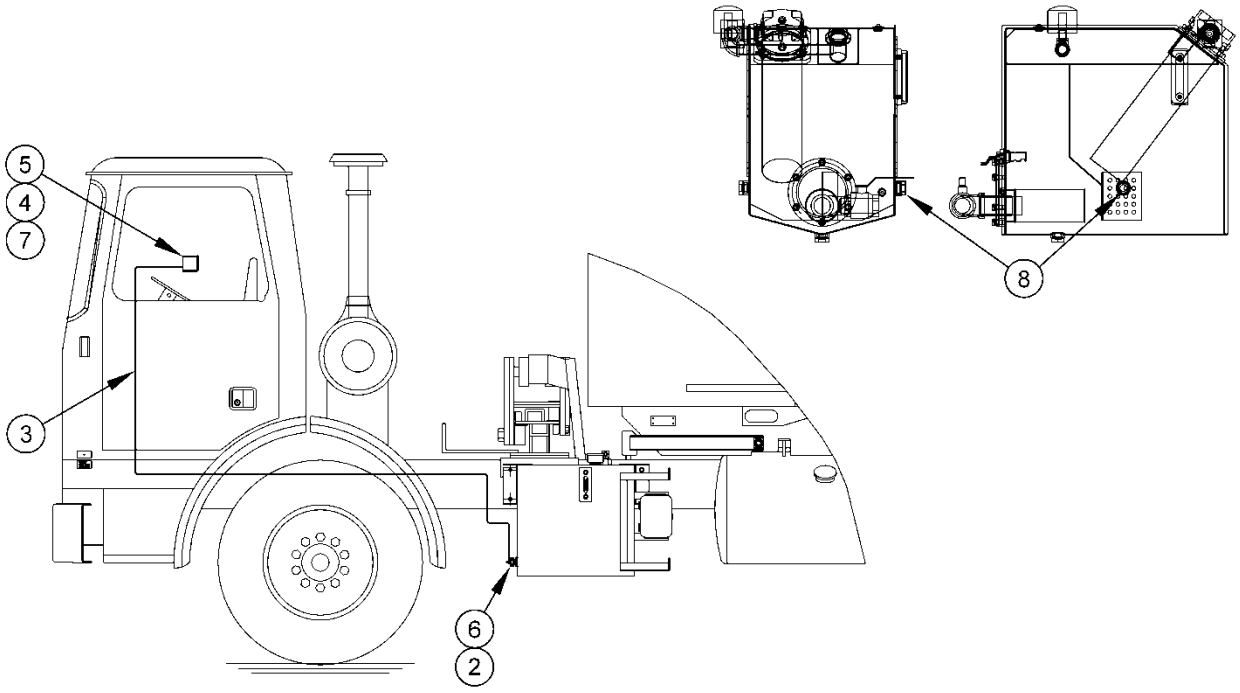
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	272-6411	KIT, Sheet, Side, Metal, Hopper	-	REF
1	075-0936	PANEL, Hopper	-	1
2	237-5499	FRAME, Support	-	1
3	237-5500	FRAME, Top Support	-	1
4	237-5501	FRAME, Support, CS	-	1
5	237-5502	FRAME, Center Support	-	1
6	075-0764	SCREEN, Filler	-	REF

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OIL TEMPERATURE GAUGE KIT

272-6413



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OIL TEMPERATURE GAUGE KIT

272-6413

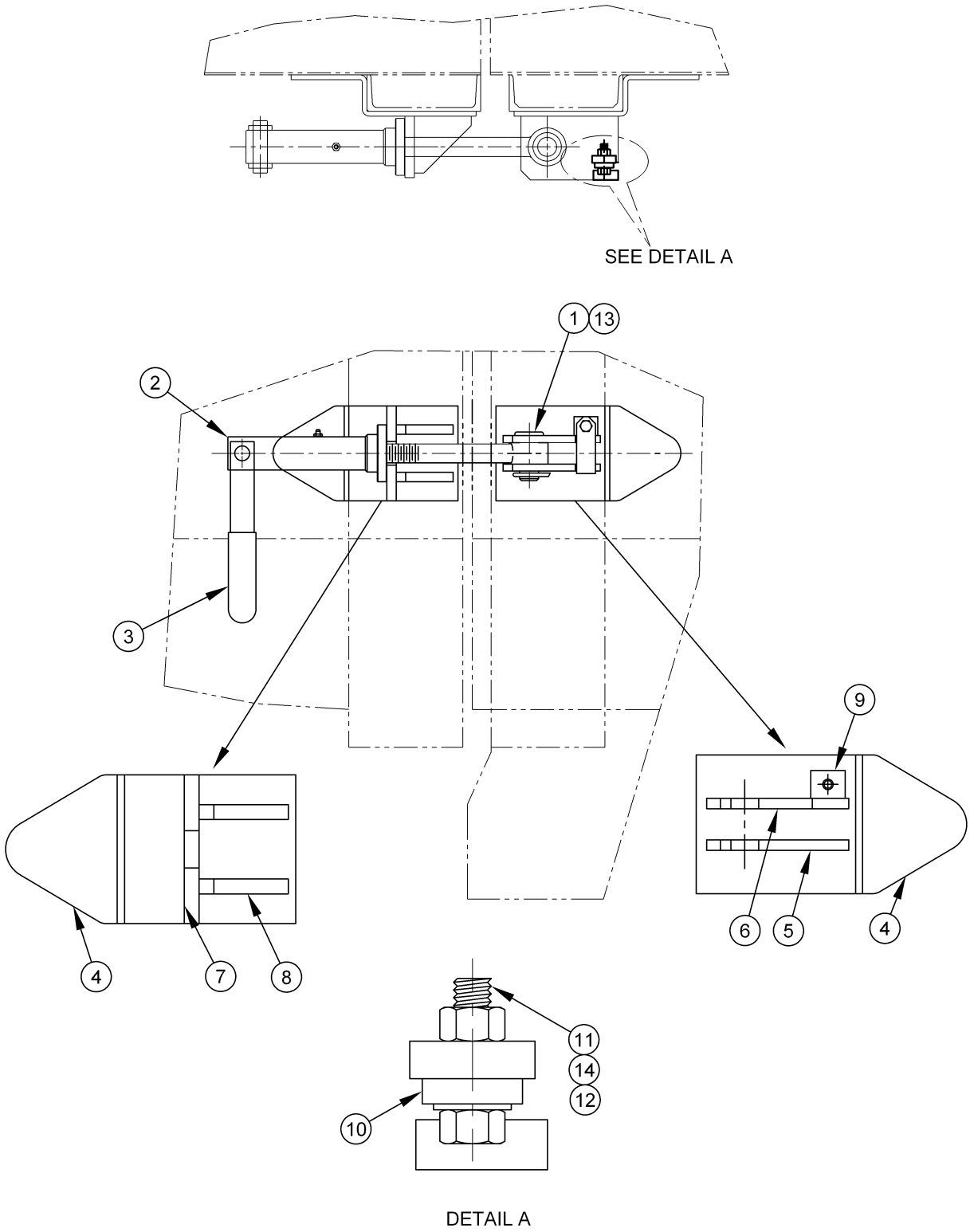
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	272-6413	KIT, Gauge, Oil Temperature	-	REF
-1	036-1640-208	TIE, Wire, 7-1/25”, #50	-	25
2	074-1826-004	FLANGE, 1/2" NPT	-	1
3	108-6509	HARNESS, Gauge, Temperature (See SM 10)	-	1
4	161-0102	GAUGE, Temperature	-	1
5	237-7111	BRACKET, Gauge, Temperature	-	1
6	254-3737	UNIT, Sending	-	1
7	FS500720	SCREW, Tek, 1/4" x 1”	-	4
8	054-4194-007	ADAPTER, 1" SAE-1/2" NPT	-	1

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TURNBUCKLE KIT

272-6682



DETAIL A

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TURNBUCKLE KIT

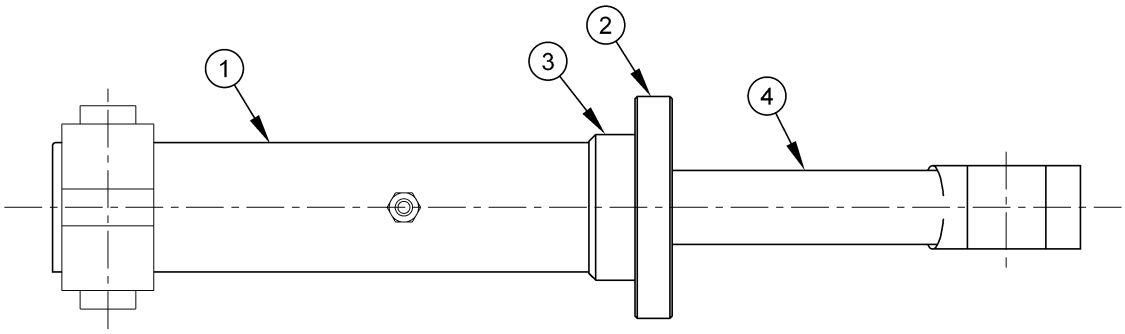
272-6682

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	272-6682	KIT, Turnbuckle	-	REF
1	048-3127-010	PIN, Clevis, 5/32” x 1-1/2”, 1”, Plated	-	2
2	053-1877	ASSEMBLY, Latch (See Pg. 7201)	-	2
3	070-1451	HANDLE, Grip	-	2
4	211-8268	BRACKET, Reinforcement	-	4
5	211-8269	BRACKET, Turnbuckle, 3/8”	-	2
6	211-8270	BRACKET, Turnbuckle, 3/8”	-	2
7	211-8271	BRACKET, Turnbuckle, 3/8”	-	2
8	211-8272	GUSSET, Turnbuckle, 3/8”	-	4
9	211-8273	HINGE, Bracket, Turnbuckle	-	2
10	211-8274	BRCAKET, Latch, Turnbuckle	-	2
11	FS070922	HHCS, 3/8”-16 x 1-1/4”, Gr. 5	-	2
12	FS230900	NUT, Lock, 3/8”-16, Gr. 5	-	2
13	FS340730	PIN, Cotter, 1/4" x 2", Steel	-	2
14	FS520900	WASHER, Flat, 3/8” SAE, Plain	-	2

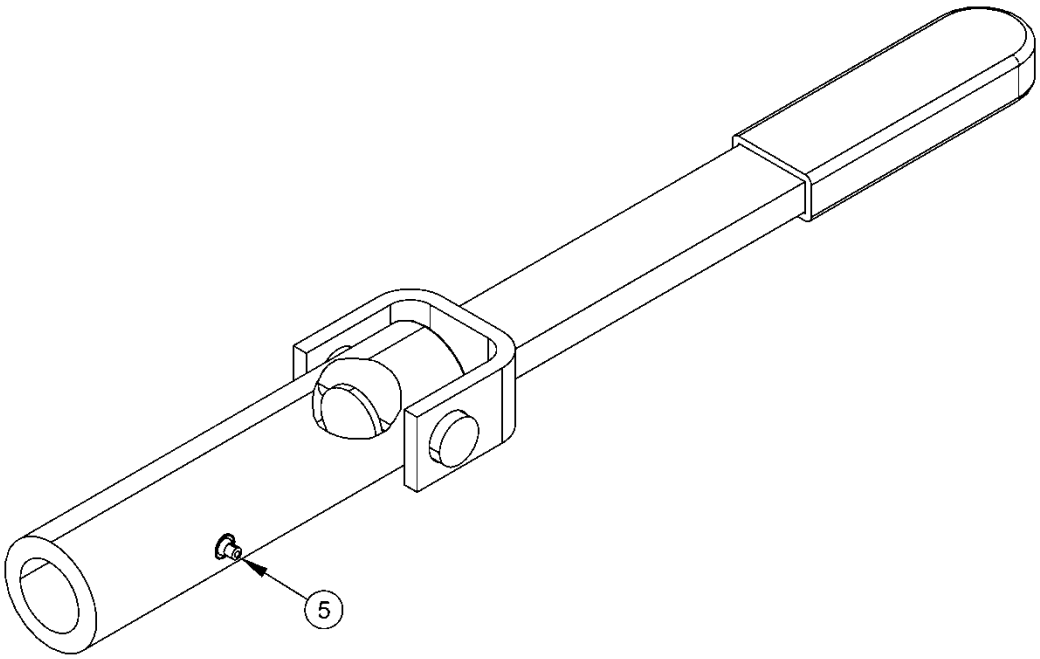
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LATCH ASSEMBLY
053-1877



CLEVIS HANDLE ASSEMBLY
070-1460



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LATCH ASSEMBLY
053-1877

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	053-1877	ASSEMBLY, Latch	-	REF
1	070-1460	ASSEMBLY, Handle, Clevis (See Pg. 7201)	-	1
2	055-0979	WASHER, Tailgate Lock	-	1
3	204-8413	BEARING, Thrust	-	1
4	047-1430	BOLT, Eye, Latch	-	1
-5	NA	-	-	-

CLEVIS HANDLE ASSEMBLY
070-1460

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	070-1460	ASSEMBLY, Handle, Clevis	-	REF
5	FS190400	FITTING, Grease, Str., 1/8” NPT	-	1

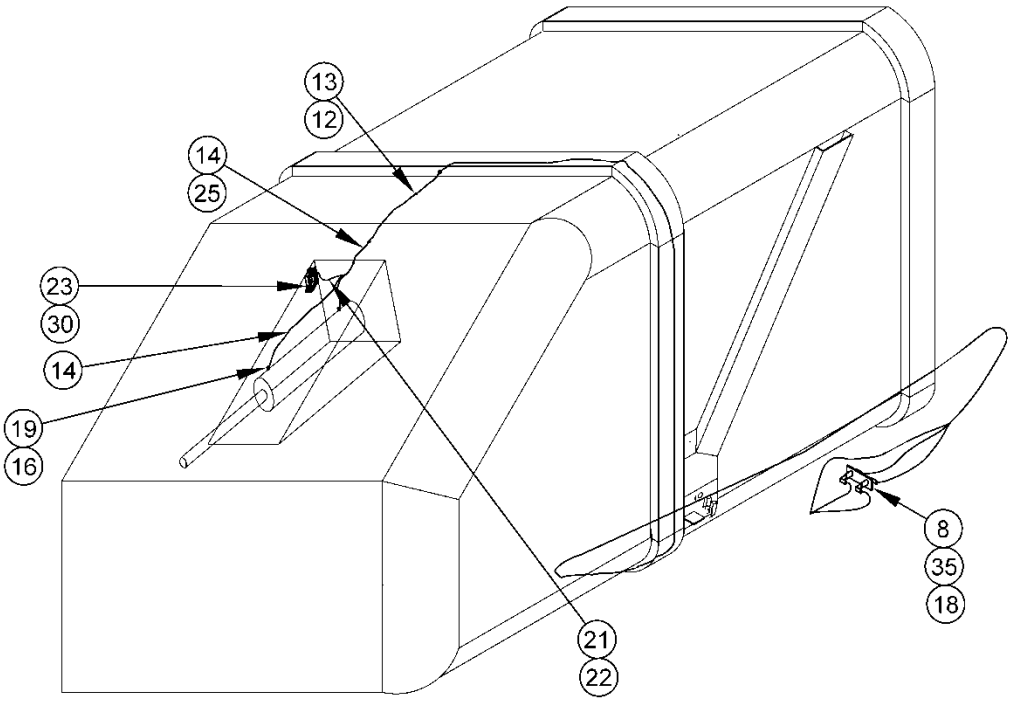
Note: Items 1-4 and 6 are welded.

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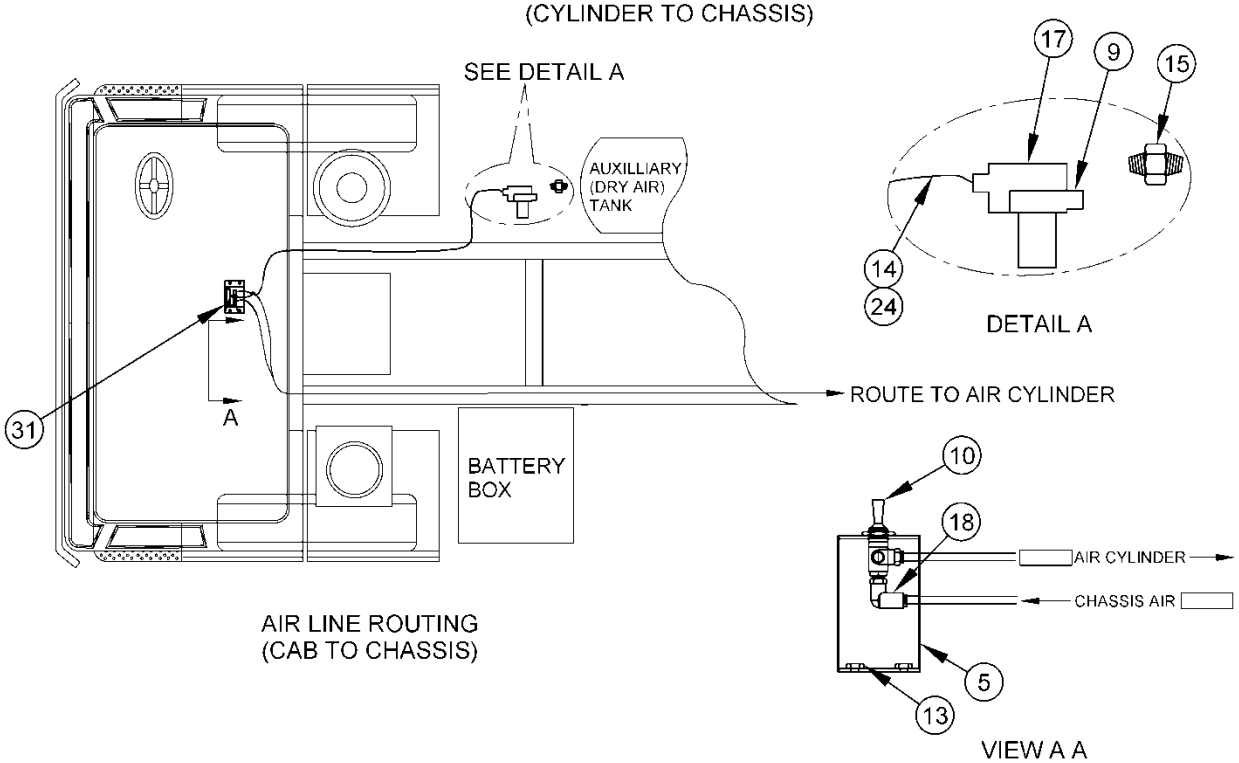
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PNUEMATIC HOPPER COVER

272-6707



AIR LINE ROUTING
(CYLINDER TO CHASSIS)



AIR LINE ROUTING
(CAB TO CHASSIS)

SHEET 1 OF 2

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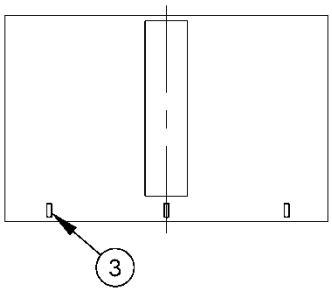
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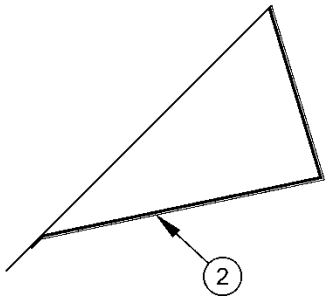
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PNUEMATIC HOPPER COVER

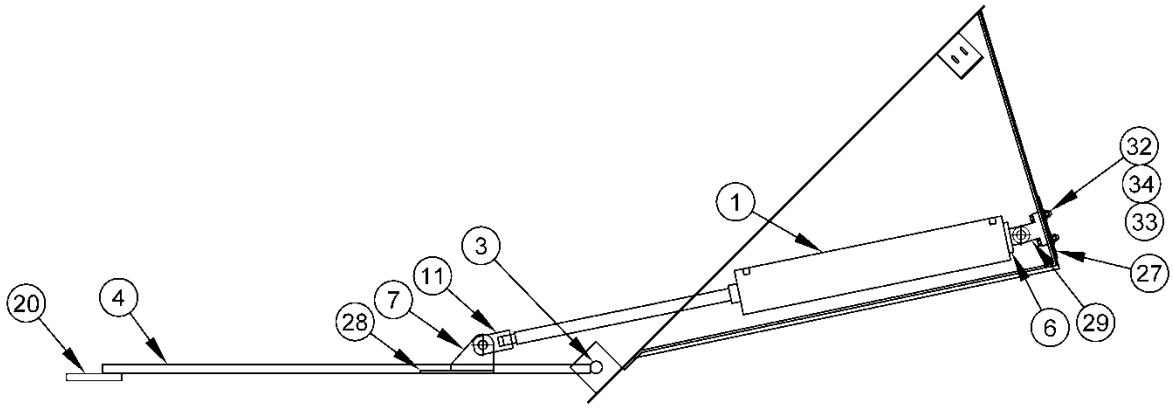
272-6707



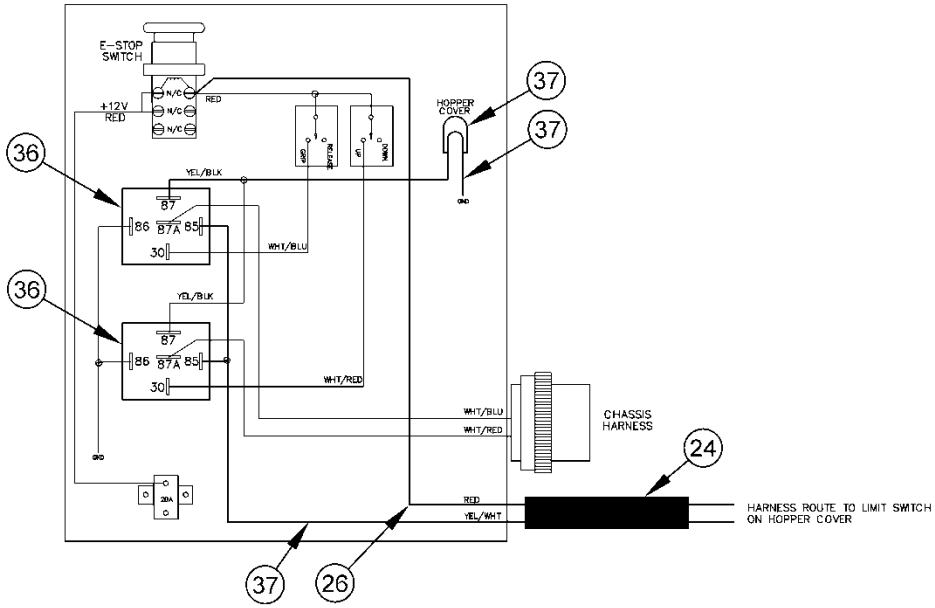
ROOF SHEET CUTOUT



CYLINDER BASKET ASSEMBLY



CYLINDER MOUNTING INSTRUCTIONS



CONTROL BOX WIRING DETAIL

SHEET 2 OF 2

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PNUEMATIC HOPPER COVER

272-6707

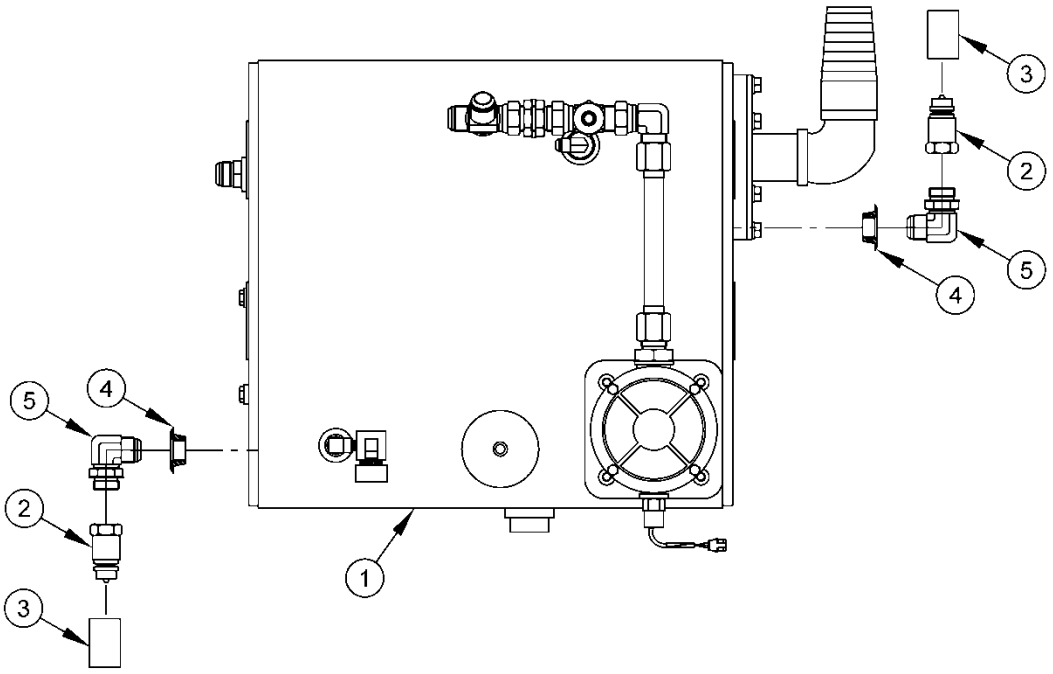
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	272-6707	COVER, Hopper, Pneumatic	-	REF
1	001-6173	CYLINDER, Air, 3-1/4” Bore	-	1
2	066-1149	ASSEMBLY, Bracket, Cylinder (Item Welded)	-	1
3	094-2154	ASSEMBLY, Journal, Hopper Cover (See Pg. 7141)	-	3
4	112-9945	WELDMENT, Cover, Hopper	-	1
5	211-8299	ASSEMBLY, Bracket, Air Valve (Item Welded)	-	1
6	211-8290	KIT, Mtg., Air Cylinder	-	1
7	003-4575	BEARING, Cylinder, Pneumatic, Hopper Cover, 1” HRS	-	1
8	021-3746	BAR, Air Fitting, 7 Ga., 1-1/2” x 4”, HRS	-	1
9	031-1909	VALVE, Pressure, Protection, Air Supply System	-	1
10	031-5785	SWITCH, Toggle, Air	-	1
11	032-1544	MOUNT, Clevis, Air Cylinder	-	1
12	036-1122-012	CLAMPS, Wire, Tube, 3/4" x 13/32”	-	3
13	047-2151-011	SCREW, Tek, 1/4”-14 x 1”	-	7
14	054-5449	TUBING, Air Line, 1/4", Nylon	-	200
15	054-7373	NIPPLE, hex, 1/4" NPT	-	1
16	054-8470-002	ELBOW, Air Line Connection, 1/4” NPT-1/8”	-	2
17	054-8470-003	ELBOW, Air Line Connection, 1/8” NPT-1/4”	-	1
18	054-8470-004	ELBOW, Connection, Air Line	-	7
19	074-3306-011	CONNECTOR, Reducing, 1/4"-1/2”	-	2
20	094-2155	SUPPORT, Cover, Hopper	-	1
21	108-4827-005	CONNECTOR, Male, 3 Way, Packard	-	1
22	108-4827-111	TERMINAL, Male, 16-14 AWG, Packard	-	3
23	108-4870	ASSEMBLY, Limit Switch	-	1
24	108-5034-001	LOOM, Electrical, Split Convoluted, Plastic, 1/4”	-	32’
25	108-5034-005	LOOM, Plastic, Electrical, Split Convoluted, 3/4"	-	100
26	108-5233-009	WIRE, Red, 16 Ga.	-	32’
27	134-9914	PLATE, Backing, 1/4"	-	1
28	134-9915	PLATE, Bearing, 1/4", HRS	-	1
29	211-8289	BRACKET, Pivot, 3/4” x 4”	-	1
30	211-8300	BRACKET, Switch, Limit, 10 Ga., HRS	-	1
31	212-1877	DECAL, Pneumatic, Hopper Cover	-	1
32	FSP070822	HHCS, 5/16”-18 x 1-1/4”, Gr. 5, Plated	-	4
33	FSP230800	NUT, Lock, 5/16”-18, Gr. 5, Plated	-	4
34	FSP510800	WASHER, Flat, Std., Plain, 5/16"	-	4
35	FS680404	COUPLING, Steel, Half, 1/8” x 1/8”	-	2
36	108-4643	RELAY, Throttle	-	2
37	115-0766	LIGHT, Caution, Red (See SM 7)	-	1
38	108-5233-028	WIRE, Yellow w/Black, 16 Ga.	-	35’

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ADD-ON QUICK DISCONNECT KIT

272-6822



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ADD-ON QUICK DISCONNECT KIT

272-6822

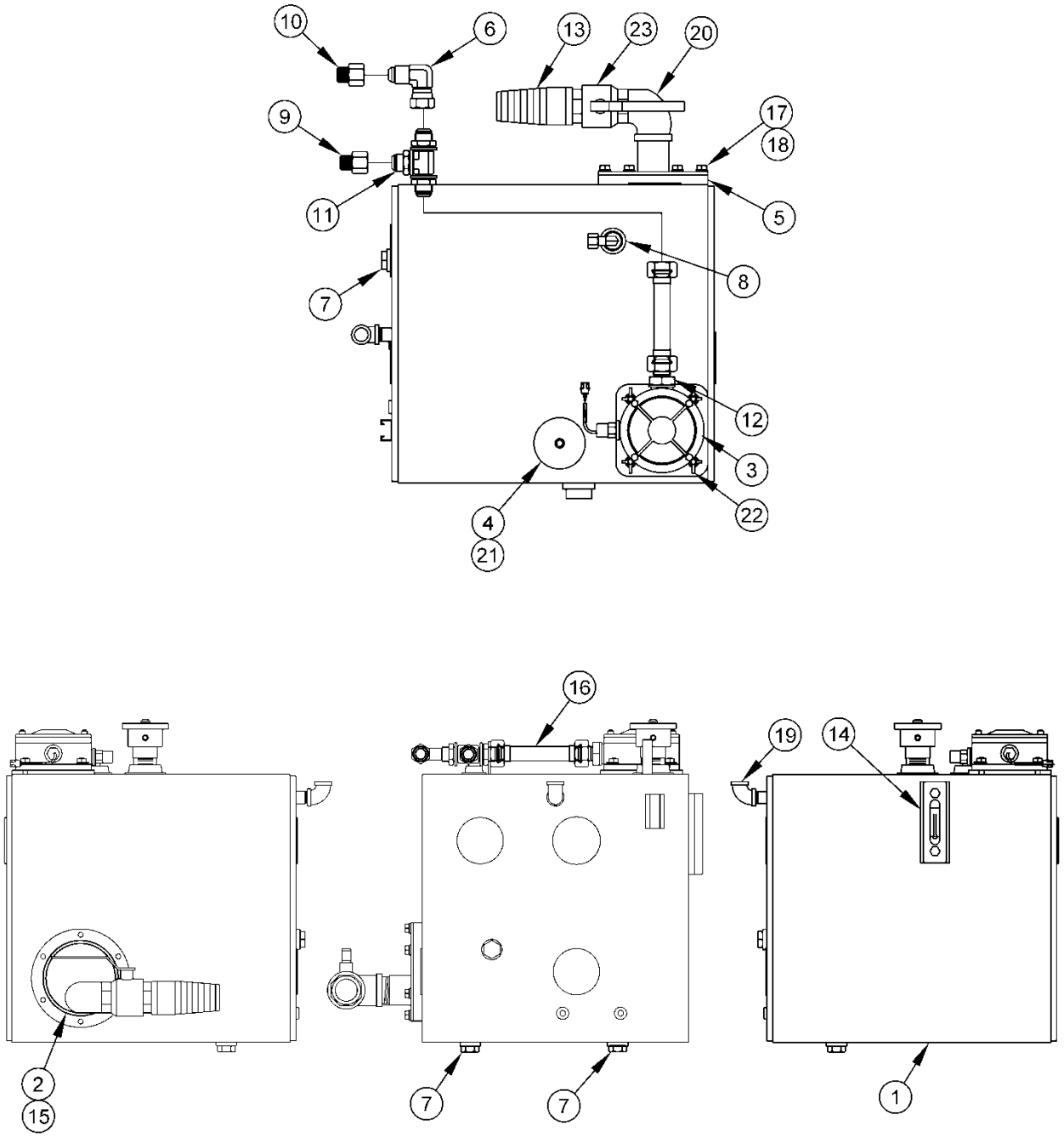
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	272-6822	KIT, Quick Disconnect, Add-On	-	REF
1	020-2197	ASSEMBLY, Oil Tank (See Pg. 7209)	-	REF
2	045-1021-002	DISCONNECT, Quick, Male End, 1” Str. Thd., O-Ring	-	2
3	045-1021-003	DISCONNECT, Quick, Male Dust Cap, 1” Str. Thd., O-Ring	-	2
4	074-1826-006	FLANGES, Tank, 45°, 1”-2-1/8”	-	2
5	074-3623-008	ELBOW, 90°, Adapter, 1” x 1-1/16”-12, Str. Thd., O-Ring	-	2

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OIL TANK ASSEMBLY

020-2197



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OIL TANK ASSEMBLY

020-2197

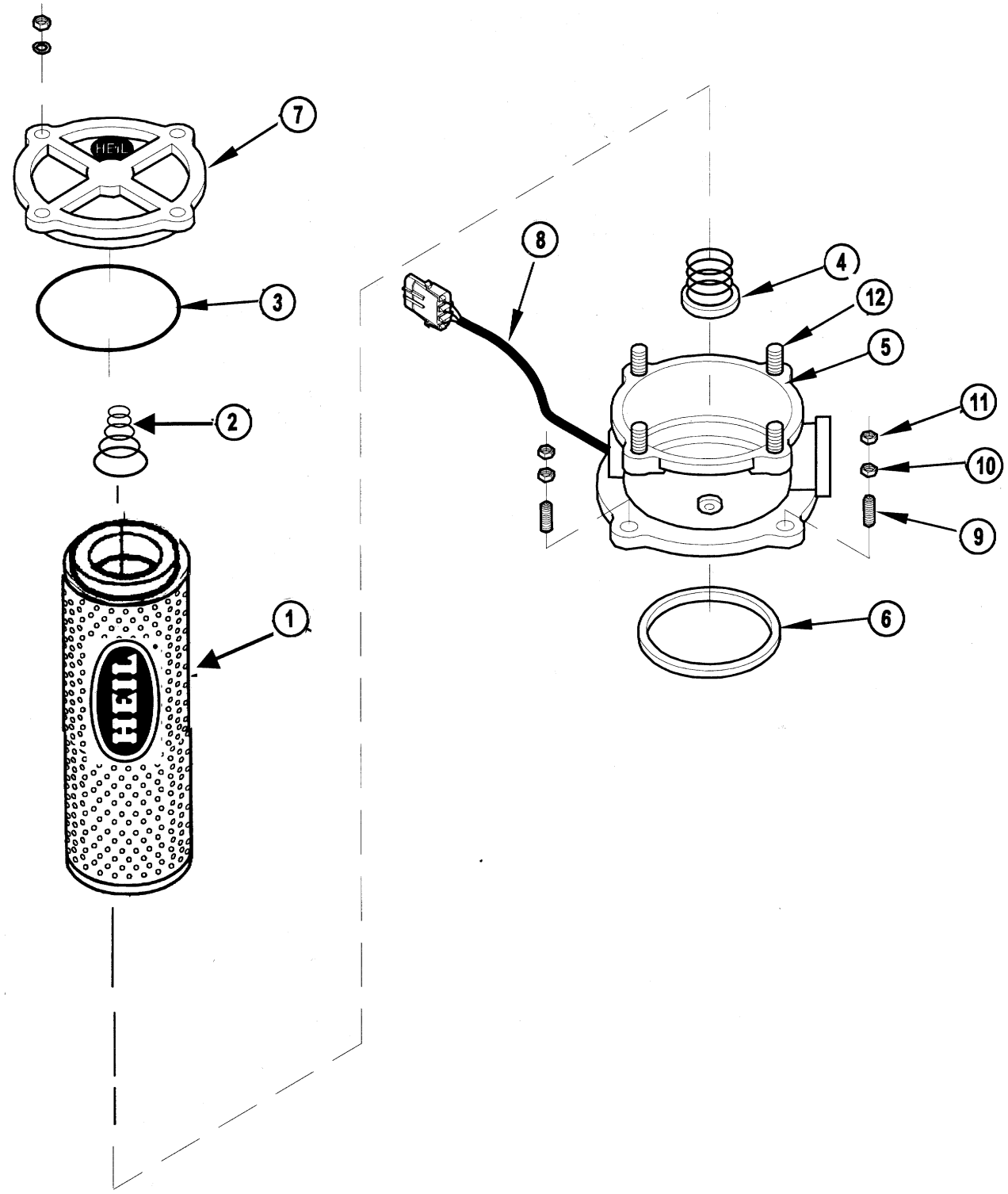
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	020-2197	ASSEMBLY, Oil Tank	-	REF
1	020-2196	WELDMENT, Oil Tank (Item Welded)	-	1
2	074-3626	FLANGE, Oil Tank	-	1
3	075-0912	FILTER, Return Line (See Pg. 7211)	-	1
4	020-2168	CAP, Filler, Neck	-	1
5	022-2707	GASKET, Oil Tank	-	1
6	054-2988-011	ELBOW, 90°, Flare 37°	-	1
7	054-3342-010	PLUG, Male, 1”, SAE, #12	-	3
8	054-3531-015	ELBOW, 45°, Male, 3/4"-16 x 1/2"-14, NPT/JIC	-	1
9	054-6547-016	REDUCER, JIC, 1-1/4” to 3/4" Tube	-	1
10	054-6547-017	REDUCER, JIC, 1-1/4” Tube to 1” Tube	-	1
11	054-7605-020	TEE, Male, Bulkhead, 37°, 1-1/4” to 1-5/8”-12	-	1
12	058-3205-030	REDUCER, 1-1/2” SAE to 1-1/4” JIC	-	1
13	058-8579-006	FITTING, Suction Hose, Split Flange, 2” NPT	-	1
14	067-0630	GAUGE, Sight, Thermometer, 1/2"-13	-	1
15	075-0578	STRAINER, Suction	-	1
16	TAR-G007-025	TUBE, Return, 1-1/4”	-	1
17	FS071120	HHCS, 1/2"-13 x 1”, Gr. 5	-	6
18	FS541100	WASHER, Lock, 1/2'', Plain	-	6
19	FS761515	ELBOW, 3/4"	-	1
20	FS823000	ELBOW, Street, 90°, Malleable, #150 and #300, 2" NPT	-	1
21	FS883000	ELBOW, Street, 90°, 2”, Ductile, #300	-	1
22	053-1997	WASHER, Lock, Oil Tank	-	4
23	031-2616	VALVE, Shut-Off	-	1

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RETURN LINE FILTER

075-0912



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RETURN LINE FILTER

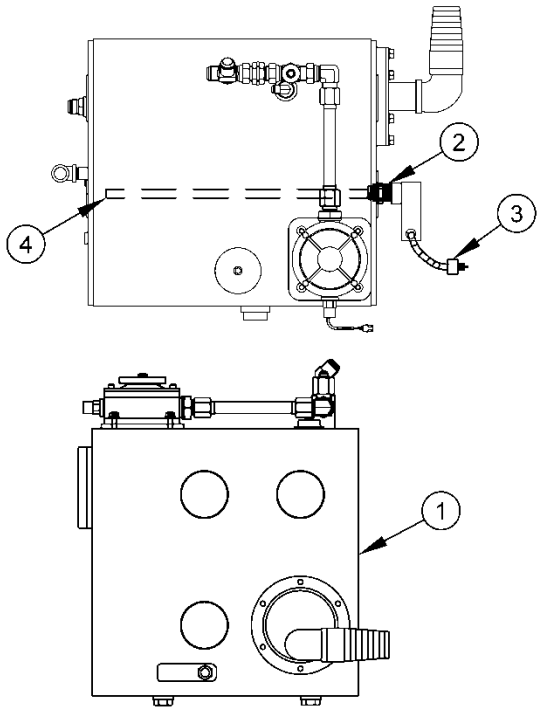
075-0912

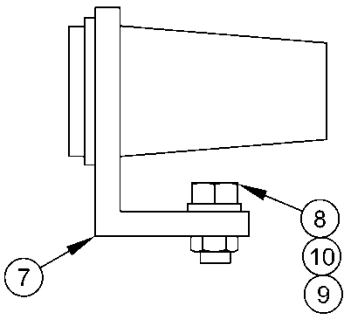
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	075-0912	FILTER, Return Line	-	REF
1	075-0912-030	ELEMENT, Replacement Filter (3 Micron)	-	1
2	075-0912-004	SPRING (Part of Cover, Item 7)	-	1
3	075-0912-003	O-RING, Cover	-	1
4	NSS	ASSEMBLY, By-Pass (Part of Element)	-	1
5	075-0711-009	HEAD	-	1
6	075-0711-010	GASKET, Tank	-	1
7	075-0912-002	COVER (Includes Spring Item 2)	-	1
8	075-0711-012	INDICATOR, Electrical	-	1
9	047-2293-001	STUD, 3/8” Double End	-	4
10	FSP240900	NUT, Lock, 3/8”-24	-	4
11	FSP270900	NUT, Hex, 3/8”-24	-	4
12	075-0711-013	STUD	-	4

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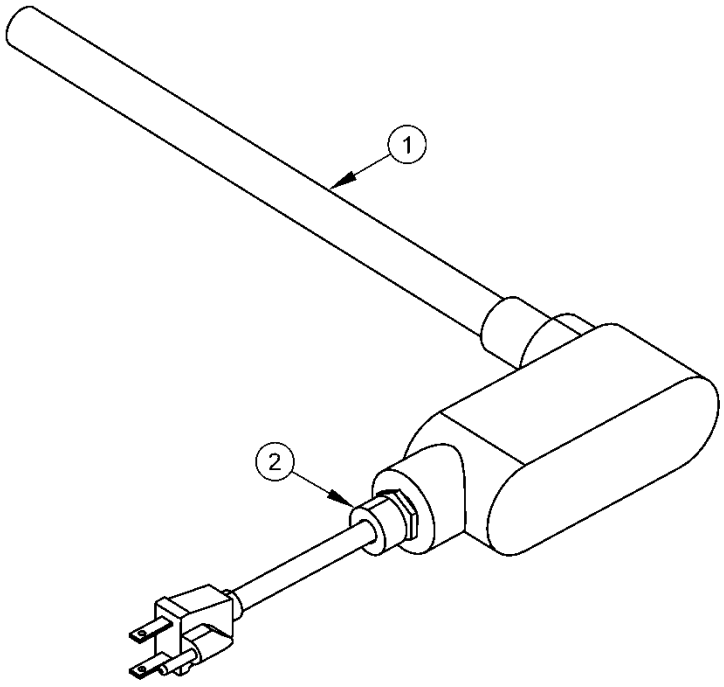
OIL TANK HEATER KIT
272-6831





INSTALL PLUG PER
JEB INSTRUCION SHEET

HEATER ASSEMBLY
075-0897



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OIL TANK HEATER KIT
272-6831

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	272-6831	KIT, Heater, Oil Tank	-	REF
1	020-2197	ASSEMBLY, Oil Tank (See Pg. 7209)	-	REF
2	074-1826-005	FLANGE, 3/4"	-	1
3	108-1759-014	CONNECTOR, Cord	-	1
4	075-0897	ASSEMBLY, Heater (See Pg. 7213)	-	1
-5	108-6866-003	CABLE, Conductor, 3”	-	20’
6	108-6874	KIT, Plug, Heater	-	1
7	311-0449	BRACKET	-	1
8	FS070720	HHCS, 1/4”-20 x 1’’, Gr. 5	-	2
9	FS230700	NUT, Lock, 1/4”-20, Gr. 5	-	2
10	FS520700	WASHER, Flat, 1/4" SAE, Plain	-	4

HEATER ASSEMBLY
075-0897

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	075-0897	ASSEMBLY, Heater	-	REF
1	075-0886	ELEMENT, Heater	-	1
2	108-1759-007	GRIP, Cord	-	1

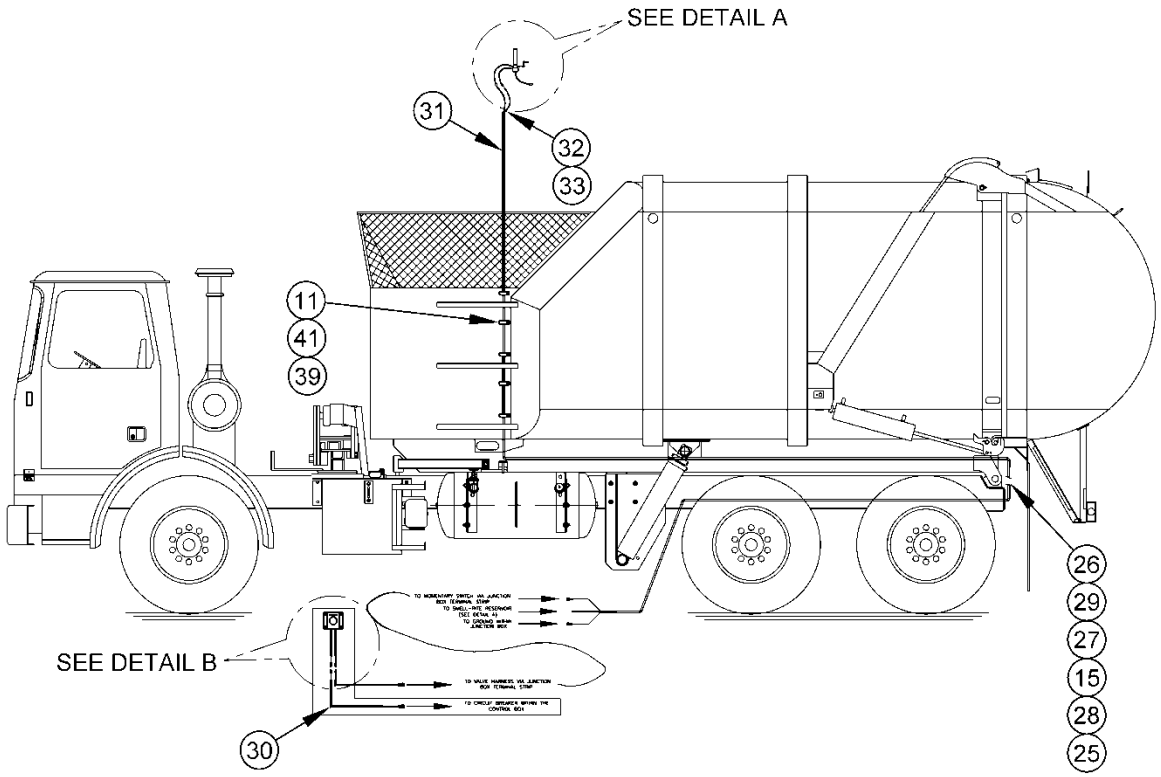
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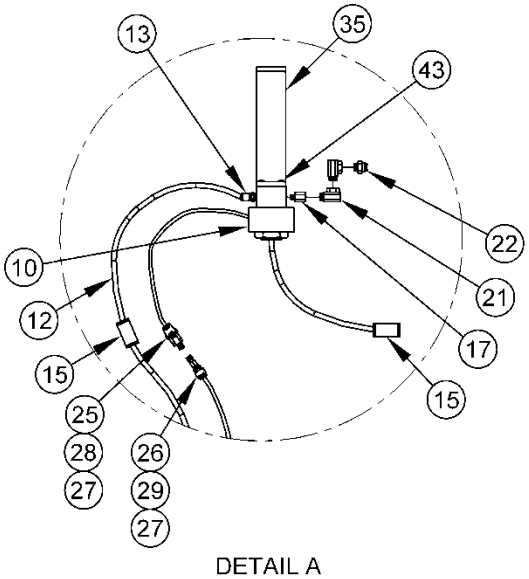
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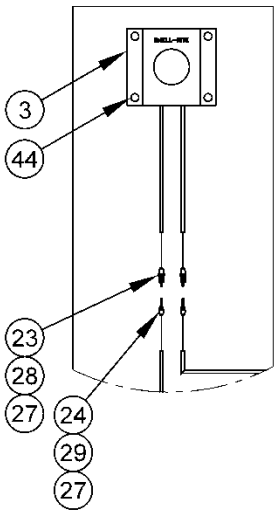
SMELL-RITE KIT

272-6844





DETAIL A



DETAIL B

SHEET 1OF 2

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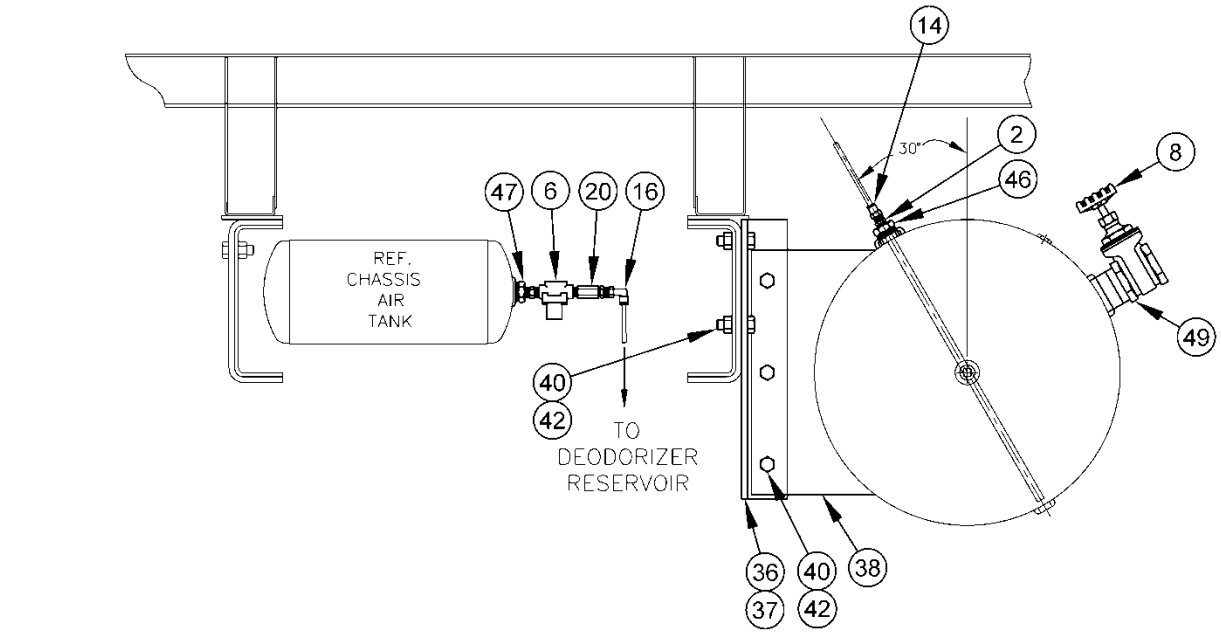
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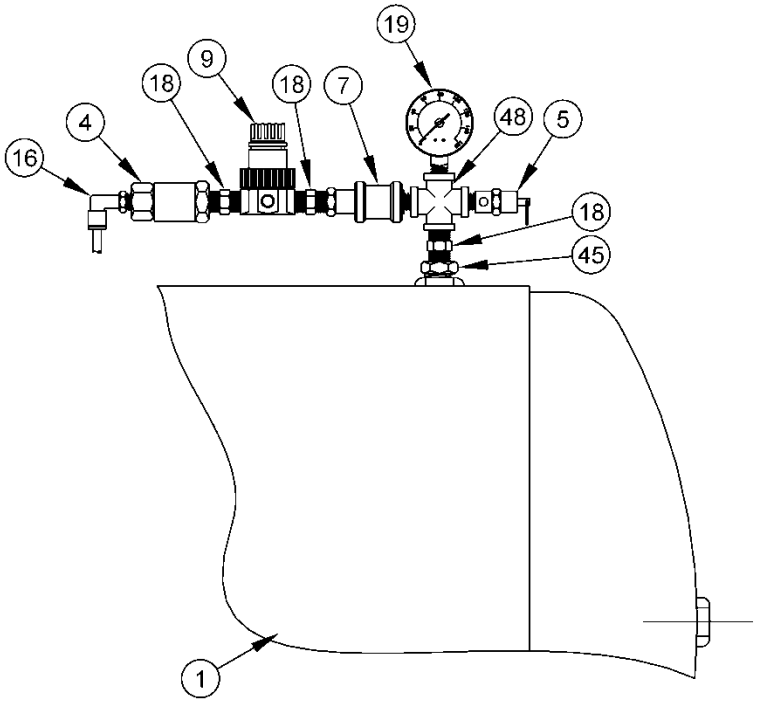
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SMELL-RITE KIT

272-6844





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SMELL-RITE KIT

272-6844

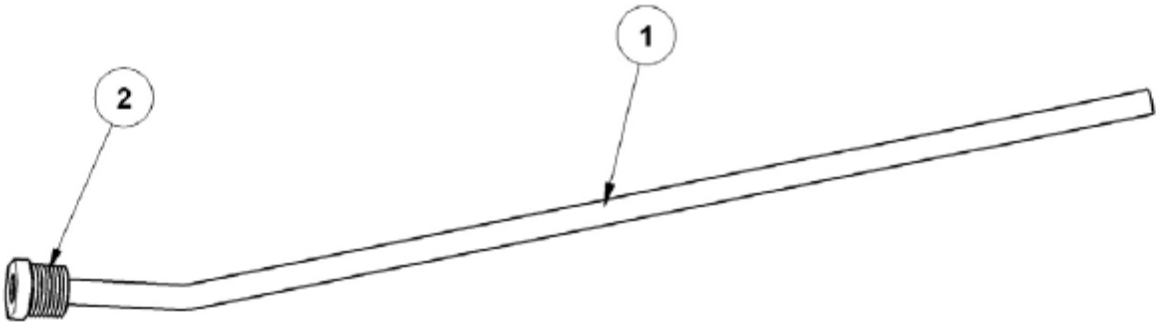
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	272-6844	KIT, Smell-Rite	-	REF
1	020-1971	TANK, Wash-Out, 60 Gal.	-	1
2	058-8546	ASSEMBLY, Feed Pipe, Wash-Out Tank, 60 Gal. (See Pg. 7219)	-	1
3	108-6196-002	ASSEMBLY, Switch/Box, Momentary	-	1
4	031-1307	VALVE, Check, Air	-	1
5	031-1774	VALVE, Relief, Pressure, 1/2" NPT	-	1
6	031-1909	VALVE, Pressure, Protection, Air Supply System	-	1
7	031-3328	VALVE, Slide, 1/4" Male-Female NPT	-	1
8	031-3421	VALVE, Shut Off, Gate, 2”	-	1
9	067-0625	REGULATOR, Pressure, 1/4" NPT	-	1
10	031-6207	VALVE, Air, Solinoid	-	1
11	036-1122-008	CLAMP, Tube, 1/2'' x 13/32”	-	5
12	054-5449	TUBING, Air Line, 1/4", Nylon	-	45’
13	054-8468-003	FITTING, Airline, 1/8”-1/4” NPT	-	1
14	054-8468-004	ELBOW, 1/4"	-	1
15	054-8469-002	UNION, Tube, 1/4"	-	3
16	054-8470-004	ELBOW, Connection, Air Line	-	2
17	054-8881-003	REDUCER, 1/8” M-1/4” F NPT	-	1
18	054-8927-002	NIPPLE, Pipe, Brass, 1/4”	-	4
19	067-0606	GAUGE, Pressure, 1/4" NPT	-	1
20	075-0434	FILTER, Air	-	1
21	087-0101	ELBOW, Swivel	-	2
22	101-0100	NOZZLE	-	1
23	108-4827-001	CONNECTOR, Male, 1 Way, Packard	-	2
24	108-4827-002	CONNECTOR, Male, 3 Way, Packard	-	2
25	108-4827-003	CONNECTOR, Male, 2 Way, Packard	-	2
26	108-4827-004	CONNECTOR, Female, 2 Way, Packard	-	2
27	108-4827-013	SEAL, Cable	-	12
28	108-4827-111	TERMINAL, Male, 16-14 AWG, Packard	-	6
29	108-4827-121	TERMINAL, Female, 16-14 AWG, Packard	-	6
30	108-5034-001	LOOM, Electrical, Split Convoluted, Plastic, 1/4”	-	25’
31	108-5034-003	LOOM, Electrical, Split Convoluted, Plastic, 1/2”	-	50’
32	108-5233-009	WIRE, Red, 16 Ga.	-	75’
33	108-5233-022	WIRE, White, 16 Ga.	-	50’
34	108-5702-005	TERMINAL, Ring	-	4
35	211-9111	BRACKET, Valve	-	1
36	272-5095-001	BRACKET w/o/Tank, SS	-	1
37	272-5095-002	BRACKET w/o/Tank, CS	-	1
38	272-5095-003	BRACKET w/o/Tank	-	2
39	FSP070713	HHCS, 1/4"-20 x 5/8”, Gr. 5, Plated	-	5
40	FSP071324	HHCS, 5/8”-11 x 1-1/2", Gr. 5, Plated	-	10
41	FSP230700	NUT, Lock, 1/4”-20, Gr. 5, Plated	-	5
42	FSP231300	NUT, Lock, 5/8”-11, Gr. 5, Plated	-	10
43	FSP400311	SCREW, Mach., #10, 1/2"	-	2
44	047-2151-011	SCREW, Tek, 1/4”-14 x 1”	-	4
45	FS591507	BUSHING, Reducing, 3/4" x 1/4", Malleable, #150 and #300	-	1
46	FS592011	BUSHING, Reducing, 1" x 1/2", Malleable, #150 and #300	-	1
47	FS600907	BUSING, Reducing, 3/8” x 1/4", Steel	-	1
48	FS690700	CROSSES, 1/4" NPT, Malleable Iron	-	1
49	FS883000	ELBOW, Street, 90°, 2”, Ductile, #300	-	1

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60 GALLON WASH-OUT TANK FEED PIPE ASSEMBLY

058-8546



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60 GALLON WASH-OUT TANK FEED PIPE ASSEMBLY

058-8546

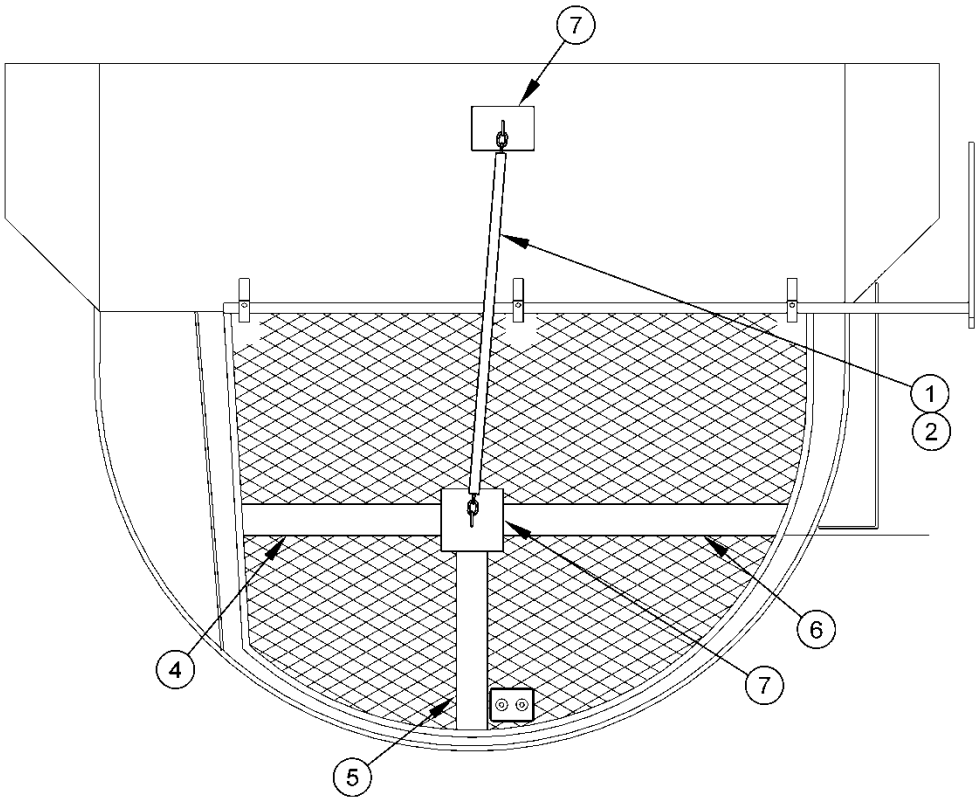
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	058-8546	ASSEMBLY, Feed Pipe, Wash-Out Tank, 60 Gal.	-	REF
1	054-7047	PIPE, Feed, 16”, Wash-Out Tank, 60 Gal.	-	1
2	FS601107	REDUCER, 1/2" NPT x 1/4" NPT	-	1

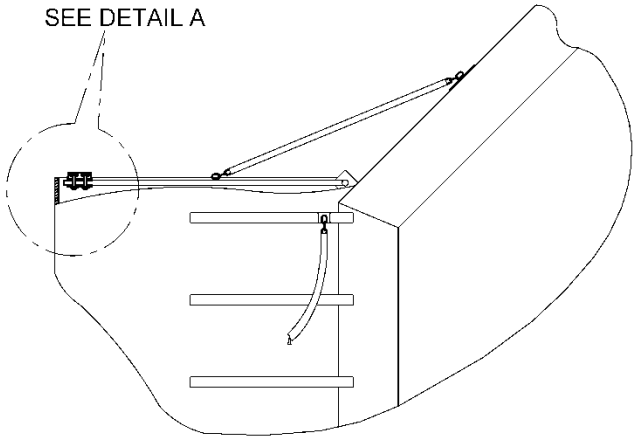
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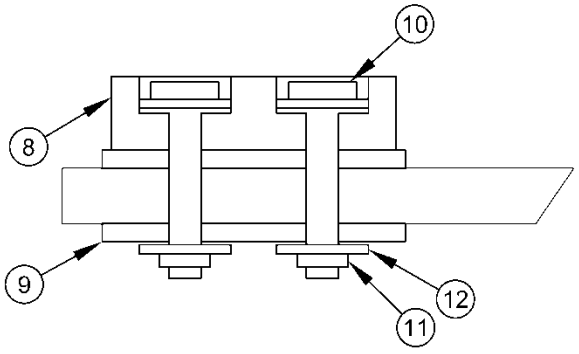
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HOPPER SUSPENSION COVER KIT

272-7284







DETAIL A

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HOPPER SUSPENSION COVER KIT

272-7284

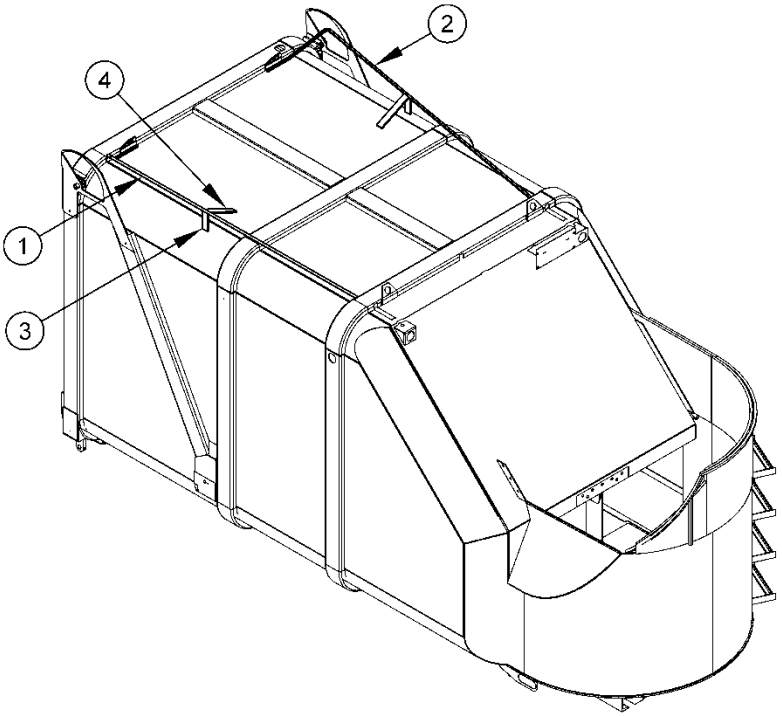
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	272-7284	KIT, Cover, Suspension, Hopper	-	REF
1	043-0801	CHAIN	-	1
2	054-8950-009	TUBING, Shrink, 1”	-	39’
-3	-	NA	-	REF
4	126-4104	BRACE	-	1
5	126-4105	BRACE	-	1
6	126-4106	BRACE	-	1
7	134-9644-046	PLATE	-	2
8	014-1537	PAD, Stop, Roll Bar	-	1
9	234-3090	PLATE, Backing, Rubber	-	2
10	FSP100926	HHCS, 3/8”-24 x 1-3/4”, Gr. 5, Plated	-	2
11	FSP240900	NUT, Lock, 3/8”-24, Gr. 5, Plated	-	2
12	FSP510900	WASHER, Flat, 3/8", Std., Plated	-	4

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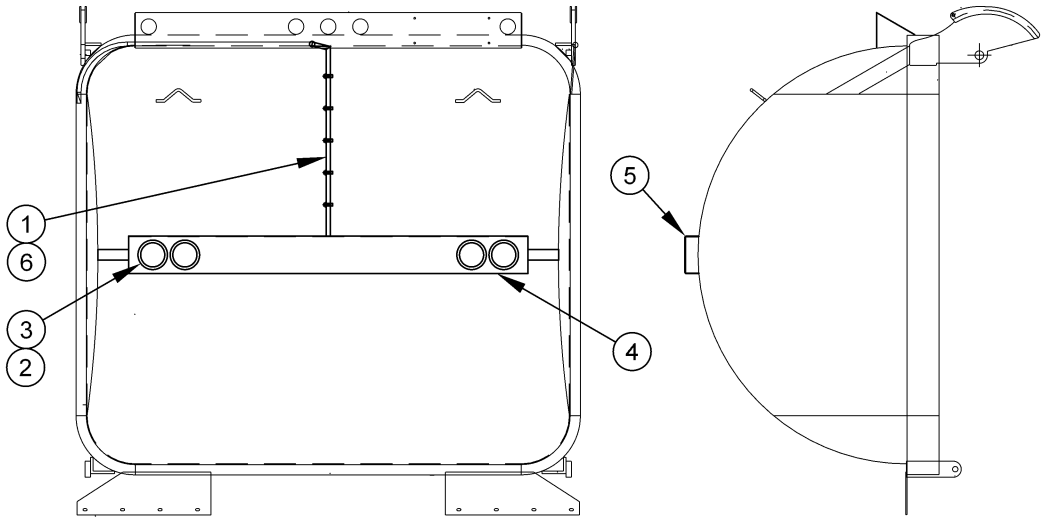
TAILGATE CABLE BRUSH GUARD

272-7314-026



STOP AND TURN SIGNAL LIGHT

272-8204



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TAILGATE CABLE BRUSH GUARD
272-7314-026

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	272-7314-026	GUARD, Brush, Tailgate Cable	-	REF
1	035-3087-001	GUARD, Cable, Tailgate, CS	-	1
2	035-3087-002	GUARD, Cable, Tailgate, SS	-	1
3	126-6775	GUARD, Cable, Tailgate, Vertical	-	2
4	126-6776	GUARD, Cable, Tailgate, Diagonal	-	2

STOP AND TURN SIGNAL LIGHT
272-8204

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	272-8204	LIGHT, Signal, Stop and Turn	-	REF
1	036-1249	CLAMP, Wire Loom	-	5
2	115-0742-001	GROMMET, Light, 4”, Round (See SM 7)	-	4
3	115-0742-002	GROMMET, Mount (See SM 7)	-	4
4	177-4179	BRACKET, Light	-	1
5	177-4180	CAP, Bracket, Light	-	2
6	263-0092	HARNESS, Light, Brake	-	1

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HOPPER COVER HANDLE SWAP KIT

272-8345

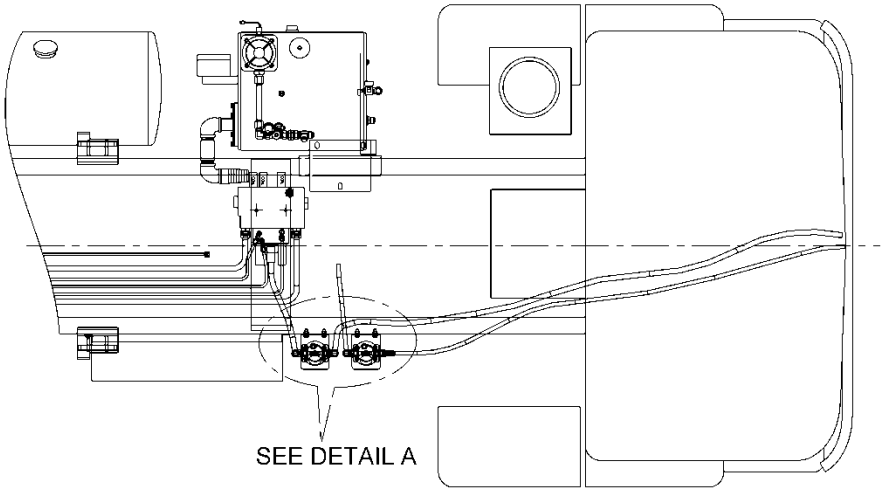
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	272-8345	KIT, Handle Swap, Cover, Hopper	-	REF
-1	-	NA	-	REF
-2	094-2170	HANDLE, Extended	-	1

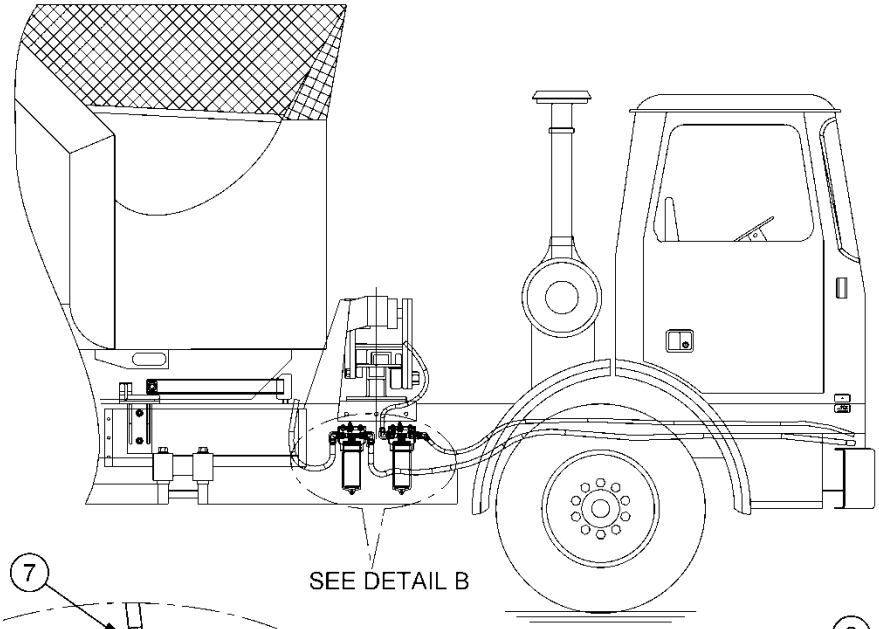
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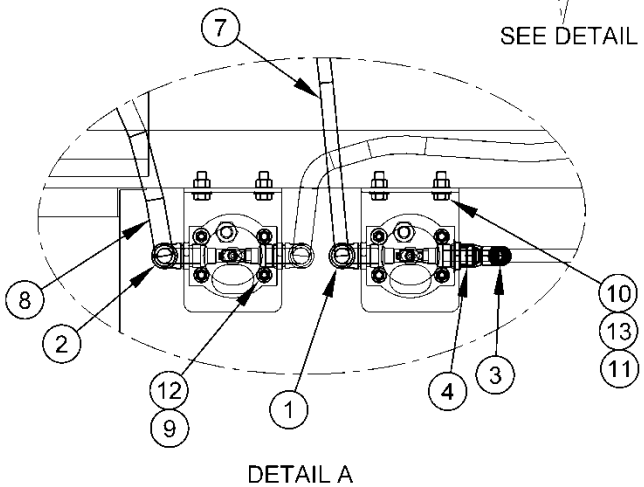
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DUAL PRESSURE FILTER KIT

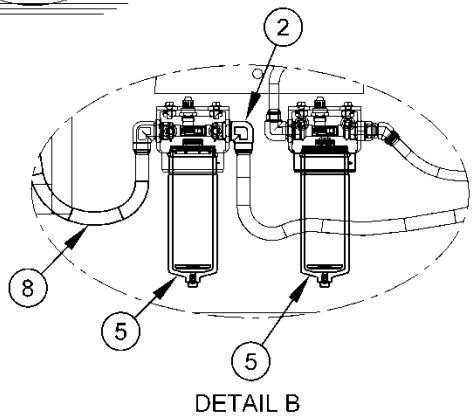
272-8620







DETAIL A



DETAIL B

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DUAL PRESSURE FILTER KIT

272-8620

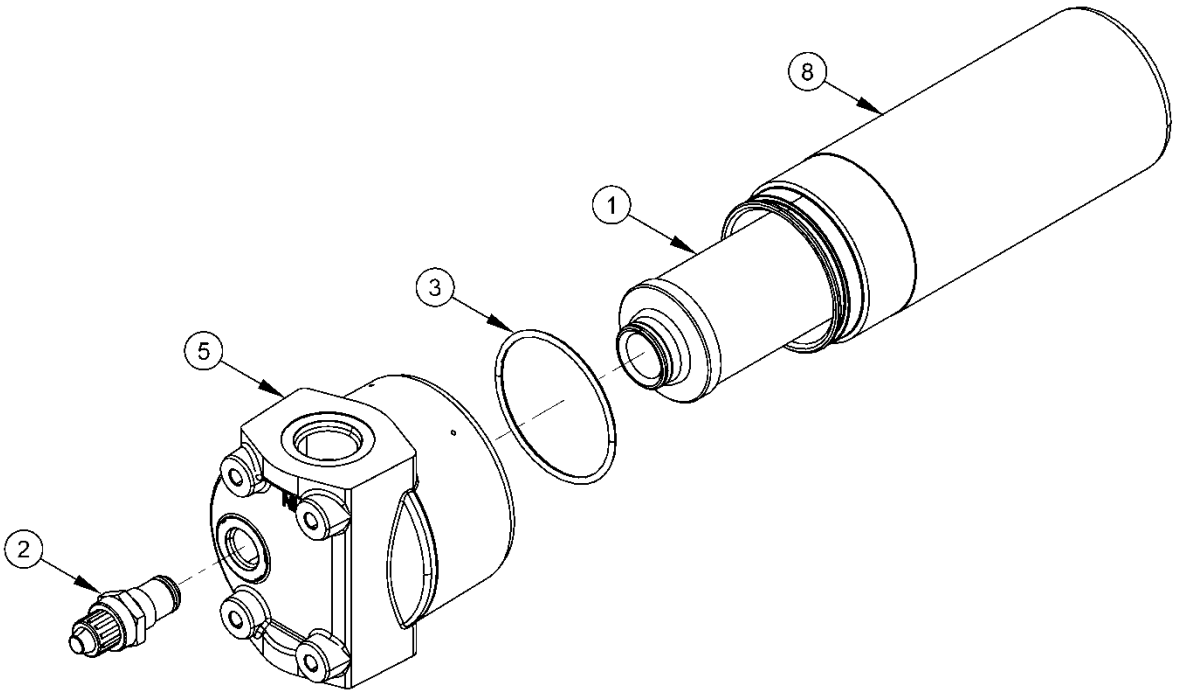
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	272-8620	KIT, Pressure Filter, Dual	-	REF
1	054-3237-003	ELBOW, Male, Reducing, 90°	-	1
2	054-3340-010	ELBOW, Male, 90°, Tube to Str. Thd. 1-5/16”-12 x 1", #16	-	2
3	054-3629-008	ELBOW, 45°, 3/4" JIC	-	1
4	058-3205-013	REDUCER, Str. Thd., SAE 1-1/16"-12 x 3/4" to, 37° JIC 1-5/16”-12 x1”	-	1
5	075-0930	FILTER, Pressure (w/Filter Head) (See Pg. 7229)	-	2
-6	311-3852	BRACKET, High Pressure Filter	-	2
7	QF5-FHFH-024	ASSEMBLY, Hose, 3/4". 37° JIC Female Swivel, 24”	-	1
8	QF6-FKFK-068	ASSEMBLY, Hose, 1”, 37° JIC Female to Male Swivel, 68”	-	1
9	FSP070920	HHCS, 3/8”-16 x 1”, Gr. 5, Plated	-	8
10	FSP071330	HHCS, 5/8’’-11 x 2’’, Gr. 5, Plated	-	4
11	FSP231300	NUT, Lock, 5/8”-11, Gr. 5, Plated	-	4
12	FSP520900	WASHER, Flat, 3/8’’, SAE, Plain	-	8
13	FSP521300	WASHER, Flat, 5/8”, SAE, Plated	-	4

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PRESSURE FILTER WITH HEAD

075-0930



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PRESSURE FILTER WITH HEAD

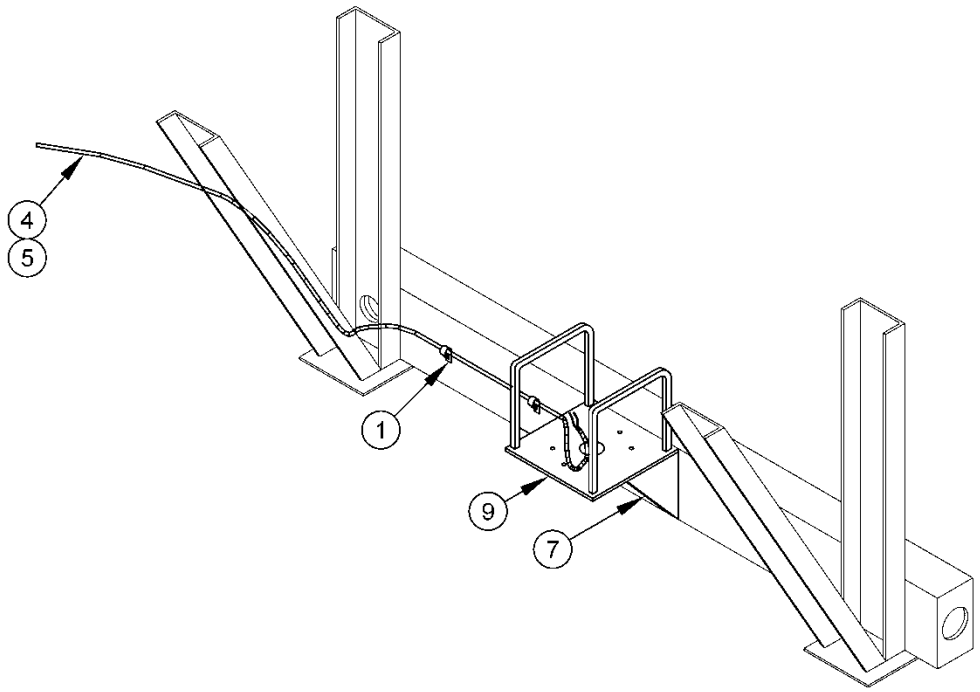
075-0930

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	075-0930	FILTER, Pressure, w/Filter Head	-	REF
1	075-0930-001	FILTER, Element, G04273	-	1
2	075-0930-002	FILTER, Indicator	-	1
3	075-0930-003	O-RING	-	1
-4	075-0930-004	KIT, Seal	-	1
5	075-0930-005	FILTER, Head	-	1
-6	075-0930-006		-	1
-7	075-0930-007		-	1
8	075-0930-008	FILTER, Bowl	-	1
-9	075-0930-010		-	1

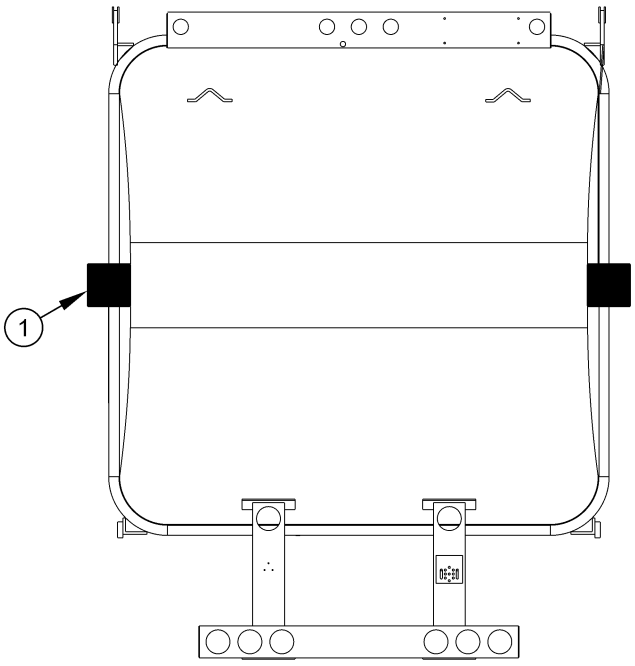
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RELOCATION STROBE KIT
272-8643



TAILGATE VISIBILITY KIT
272-8855



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RELOCATION STROBE KIT
272-8643

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	272-8643	KIT, Strobe, Relocation	-	REF
1	036-1249	CLAMP, Wire Loom	-	2
-2	108-1110-002	CONNECTOR, Butt, 14-16 Ga.	-	4
-3	108-5034-001	LOOM, Electrical, Split Convoluted, Plastic, 1/4”	-	20’
4	108-5233-006	WIRE, 16 Ga., Black/Green	-	20’
5	108-5233-022	WIRE, White, 16 Ga.	-	20’
-6	108-5975-002	TUBE, Shrink, Adhesive, Lined	-	1’
7	126-4571	GUSSET, Strobe	-	2
-8	-	NA	-	REF
9	311-0374	BRACKET, Strobe	-	1

TAILGATE VISIBILITY KIT
272-8855

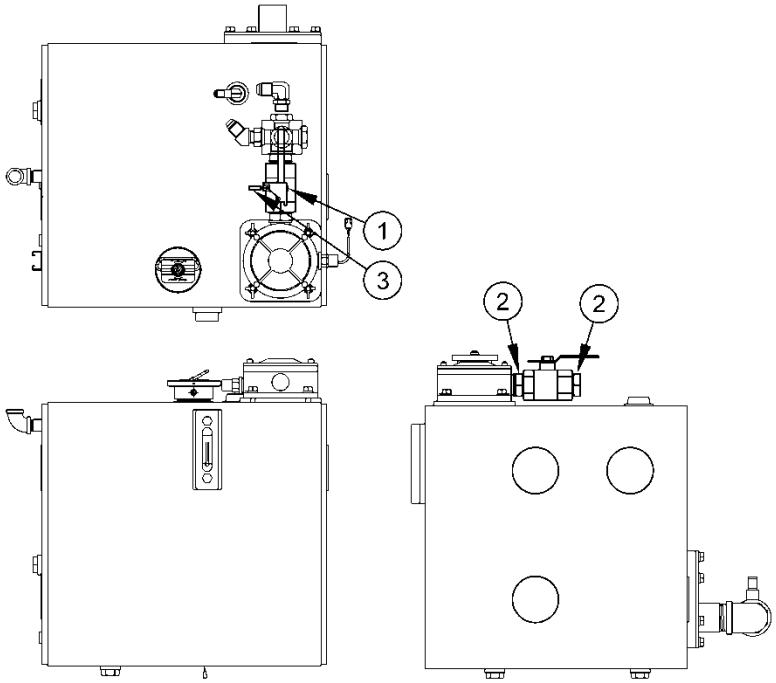
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	272-8855	KIT, Tailgate Visibility	-	REF
1	161-0234	TARGET, Visibility	-	2

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LOCKABLE RETURN LINE SHUT OFF VALVE
272-9659



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SWAP HOIST CYLINDER KIT
272-8867

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	272-8867	KIT, Hoist Cylinder, Swap.	-	REF
-1	001-6425	CYLINDER, Hoist	-	2
-2	-	NA	-	REF

LOCKABLE RETURN LINE SHUT OFF VALVE
272-9659

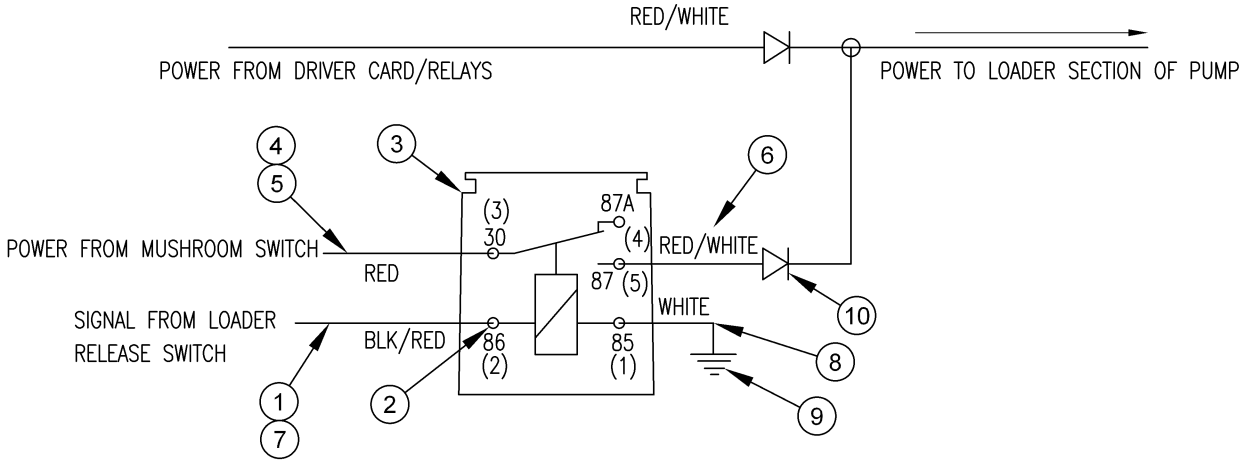
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	272-9659	VALVE, Shut Off, Return Line, Lockable	-	REF
1	031-6088	VALVE, Ball, Locking Handle	-	1
2	054-9737-009	ADAPTER, Str., 1-1/2”	-	1
3	272-9567-002	LOCK, Pad, Weather	-	1

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RELEASE AND IN ADD ON KIT

272-9660-016



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RELEASE AND IN ADD ON KIT
272-9660-016

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	272-9660-016	KIT, Add On, Release and In	-	REF
1	108-1110-002	CONNECTOR, Butt, 14-16 Ga.	-	2
2	108-2050	DISCONNECT, Quick, Terminal, w/Heat Shrink, Female	-	5
3	108-4643-001	RELAY	-	1
4	108-5034-002	LOOM, Electrical, Split Convoluted, Plastic, 3/8”	-	10’
5	108-5233-009	WIRE, Red, 16 Ga.	-	8’
6	108-5233-010	WIRE, Red/White, 16 Ga.	-	1’
7	108-5233-020	WIRE, Black/Red, 16 Ga.	-	8’
8	108-5233-022	WIRE, White, 16 Ga.	-	1’
9	108-5702-005	TERMINAL, Ring, #8	-	1
10	108-5705	ASSEMBLY, Diode, Blocking	-	1

80 KPSI FLOOR/HOPPER KIT
272-9661

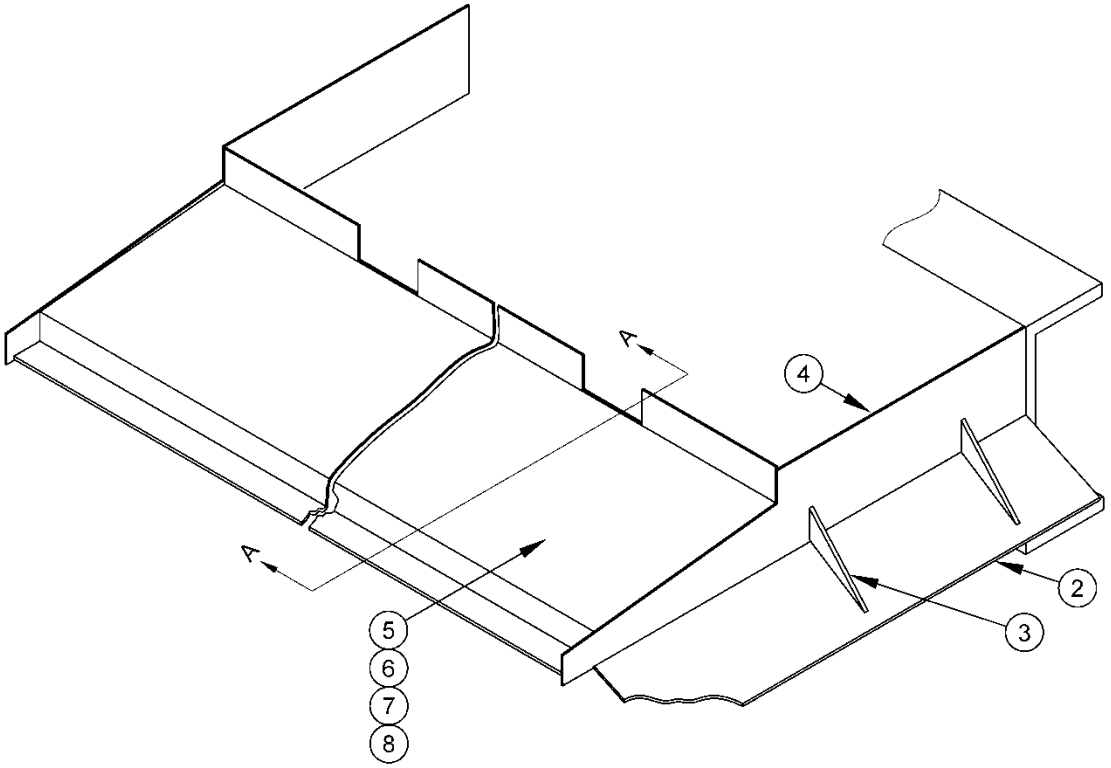
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	272-9661	KIT, Floor/Hopper, 80 KPSI	-	REF
-1	094-2535	FLOOR, Hopper, 80 KPSI	-	1
-2	094-2536	SHELL, Hopper, 80 KPSI	-	1
-3	-	NA	-	REF
-4	-	NA	-	REF

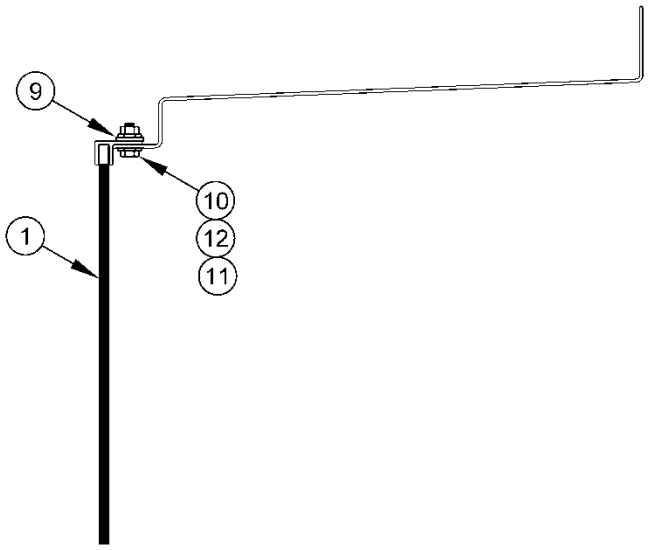
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HULA SINGLE AND TANDEM FENDER SKIRT KIT

272-9681-001, 272-9681-002





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HULA SINGLE AND TANDEM FENDER SKIRT KIT

272-9681-001, 272-9681-002

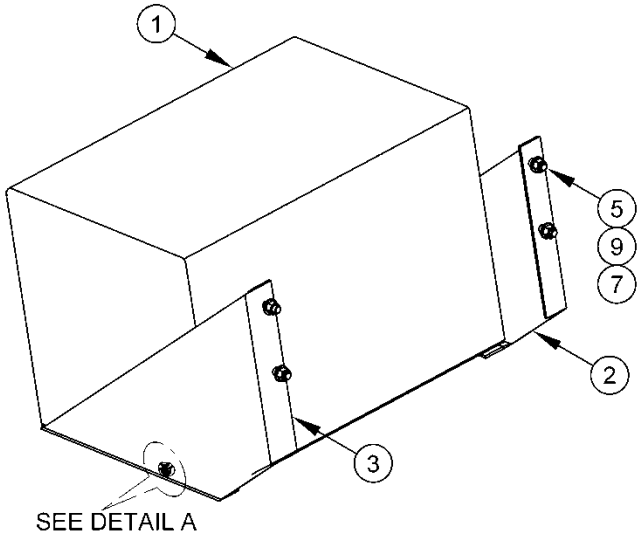
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	272-9681-001	KIT, Skirt, Single Fender, Hula	A	REF
-	272-9681-002	KIT, Skirt, Tandem Fender, Hula	B	REF
1	035-2793	SKIRT, Hula	A	2
-1a	035-2793	SKIRT, Hula	B	3
2	134-9644-003	PLATE, Extension, Fender	-	2
3	177-3202	GUSSET, Plate, Extension, Fender	-	4
4	217-1456-003	CLOSURE, End, Fender	-	4
5	217-1456-01L	FENDER, Lower Skirt, Single, SS	A	1
6	217-1456-01R	FENDER, Lower Skirt, Single, CS	A	1
7	217-1456-02L	FENDER, Lower Skirt, Tandem, SS	B	1
8	217-1456-02R	FENDER, Lower Skirt, Tandem, CS	B	1
9	311-0180	BRACKET, Reinforcing	A	2
-9a	311-0180	BRACKET, Reinforcing	B	4
10	FS070715	HHCS, 1/4”-20 x 3/4”, Gr. 5	A	22
-10a	FS070715	HHCS, 1/4”-20 x 3/4”, Gr. 5	B	46
11	FS230700	NUT, Lock, 1/4”-20, Gr. 5	A	22
-11a	FS230700	NUT, Lock, 1/4”-20, Gr. 5	B	46
12	FS520700	WASHER, Flat, 1/4" SAE, Plain	A	44
-12a	FS520700	WASHER, Flat, 1/4" SAE, Plain	B	92

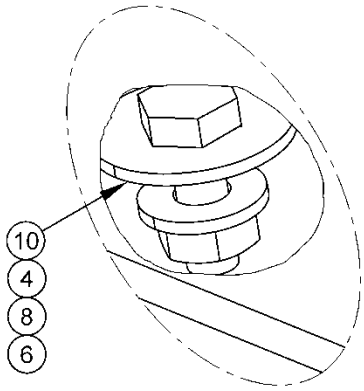
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24” X 18” X 18” EJECT AND SERVICE HOIST TOOL BOX KIT

372-1299





DETAIL A

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24” X 18” X 18” EJECT AND SERVICE HOIST TOOL BOX KIT

372-1299

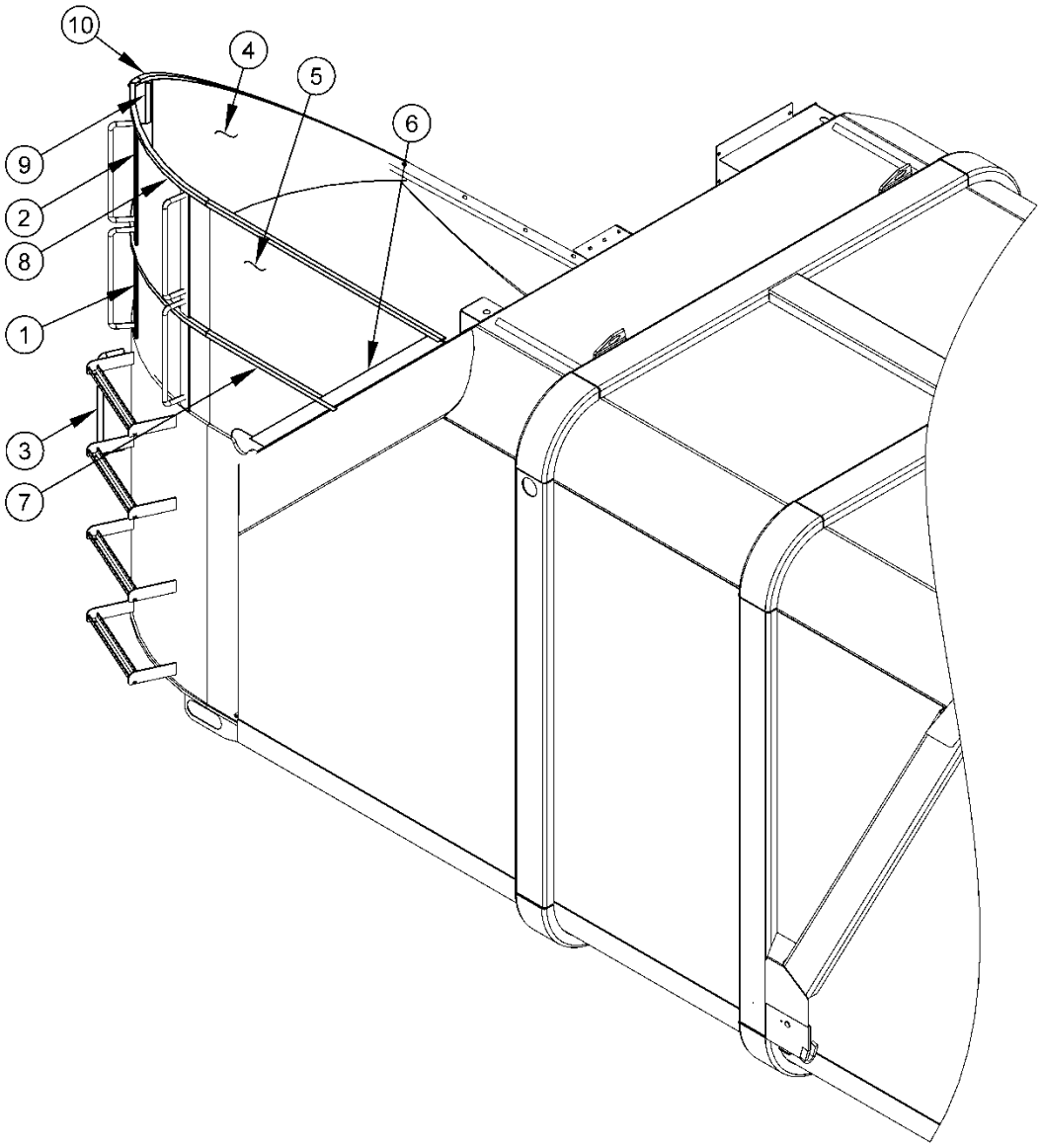
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-1299	KIT, Tool Box, Eject and SH, 24” x 18” x 18”	-	REF
1	151-1336-024	TOOL BOX, Delta, 24” x 18” x 18”	-	1
2	311-2200-00L	BRACKET, Left, Tool Box Mount	-	1
3	311-2200-00R	BRACKET, Right, Tool Box Mount	-	1
4	FSP070715	HHCS, 1/4”-20 x 3/4”, Gr. 5, Plated	-	8
5	FSP071124	HHCS, 1/2"-13 x 1-1/2”, Gr. 5, Plated	-	4
6	FSP230700	NUT, Lock, 1/4”-20, Gr. 5, Plated	-	8
7	FSP231100	NUT, Lock, 1/2”-13, Gr. 5, Plated	-	4
8	FSP520700	WASHER, Flat, 1/4” SAE, Plated	-	8
9	FSP521100	WASHER, Flat, 1/2", SAE, Plated	-	8
10	FSP530720	WASHER, Fender, 1/4" x 1”, Plated	-	8

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SOLID HOPPER RAISE KIT

372-0372



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SOLID HOPPER RAISE KIT

372-0372

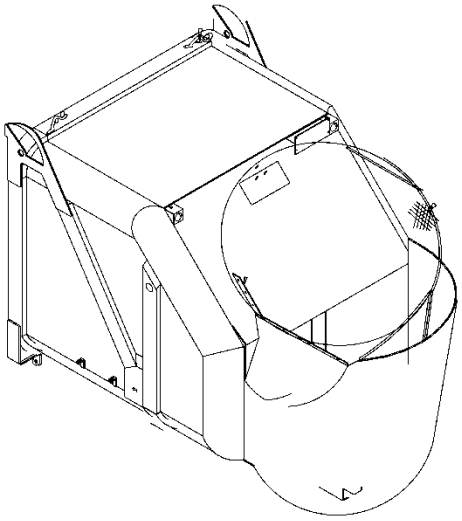
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-0372	KIT, Raise, Solid Hopper	-	REF
1	021-4094-001	REINFORCEMENT, Bar, Extended, Hopper	-	2
2	021-4094-002	REINFORCEMENT, Bar, Extended, Hopper	-	2
3	070-1103	HANDLE, Grab, 3/4" Dia.	-	5
4	112-9212	PANEL, Screen, Hopper	-	1
5	113-2602	PANEL, Screen, Hopper, Extended	-	1
6	234-1708	PLATE, Transition, Screen, Extended	-	1
7	237-5500	FRAME, Support, Top	-	1
8	237-8624	FRAME, Support, Top Bar	-	1
9	237-8626	FRAME, Bar, Support, Vertical	-	2
10	237-9243	FRAME, Bar, End, Support	-	1
11	-	NA	-	REF
12	-	NA	-	REF
13	-	NA	-	REF
14	-	NA	-	REF
15	-	NA	-	REF
16	-	NA	-	REF

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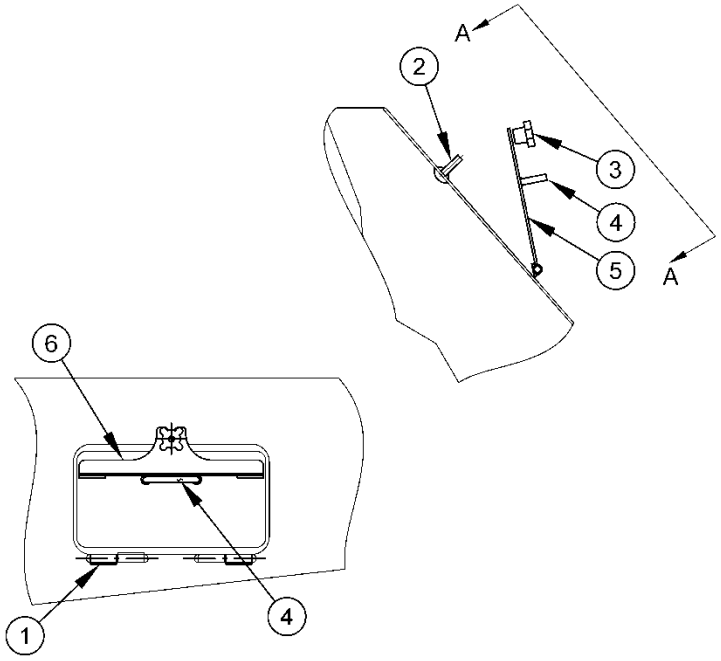
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UPPER BODY ACCESS DOOR

372-0462



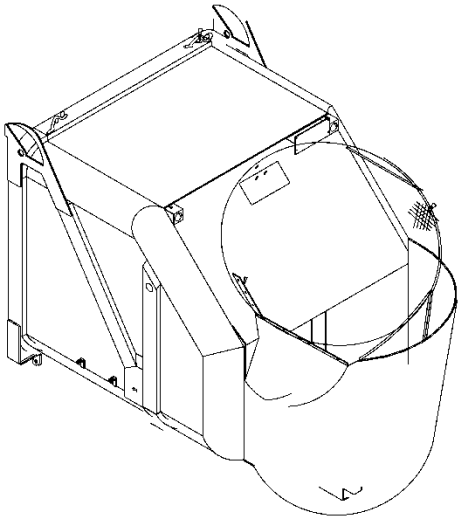
BODY VIEW



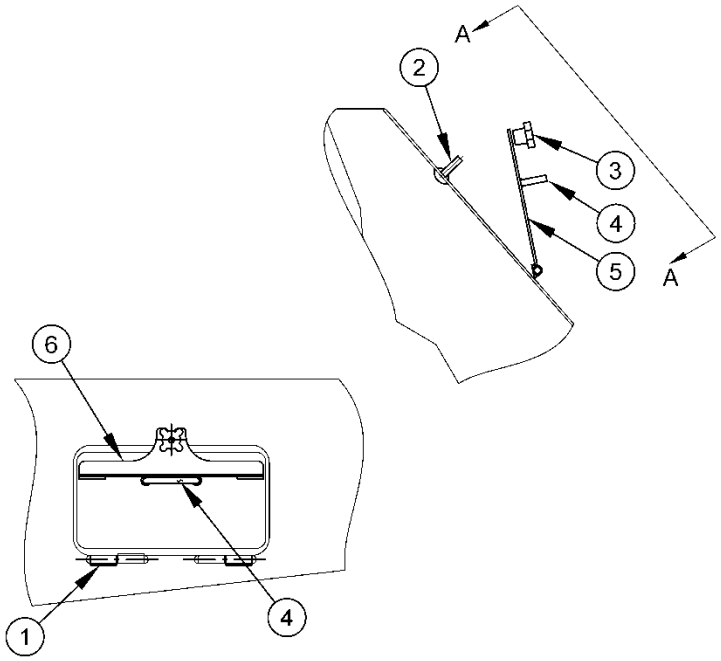
VIEW A A

ROOF ACCESS DOOR FOR FIRE HOUSE

372-0511



BODY VIEW



VIEW A A

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UPPER BODY ACCESS DOOR
372-0462

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-0462	DOOR, Access, Upper Body	-	REF
1	005-4134-008	HINGE, Bullet	-	2
2	047-2168-009	CAPSCREW, Button Head, Hex Socket, 1/2”-13 Thd. x 1-1/2”,	-	1
		Gr. 8, Zinc Plated	-	1
3	070-1579	HANDLE, Grip, Greased, Sump Door	-	1
4	070-1807	HANDLE, Door, Access	-	1
5	113-0327	DOOR, Sump	-	1
6	311-0166	BRACKET, Clamp	-	1
-7	-	NA	-	REF
-8	113-2736	ROOF, Door Kit, 16 and 26 Yd.	-	1

30 AND 32 YARD ACCESS DOOR KIT
372-0511

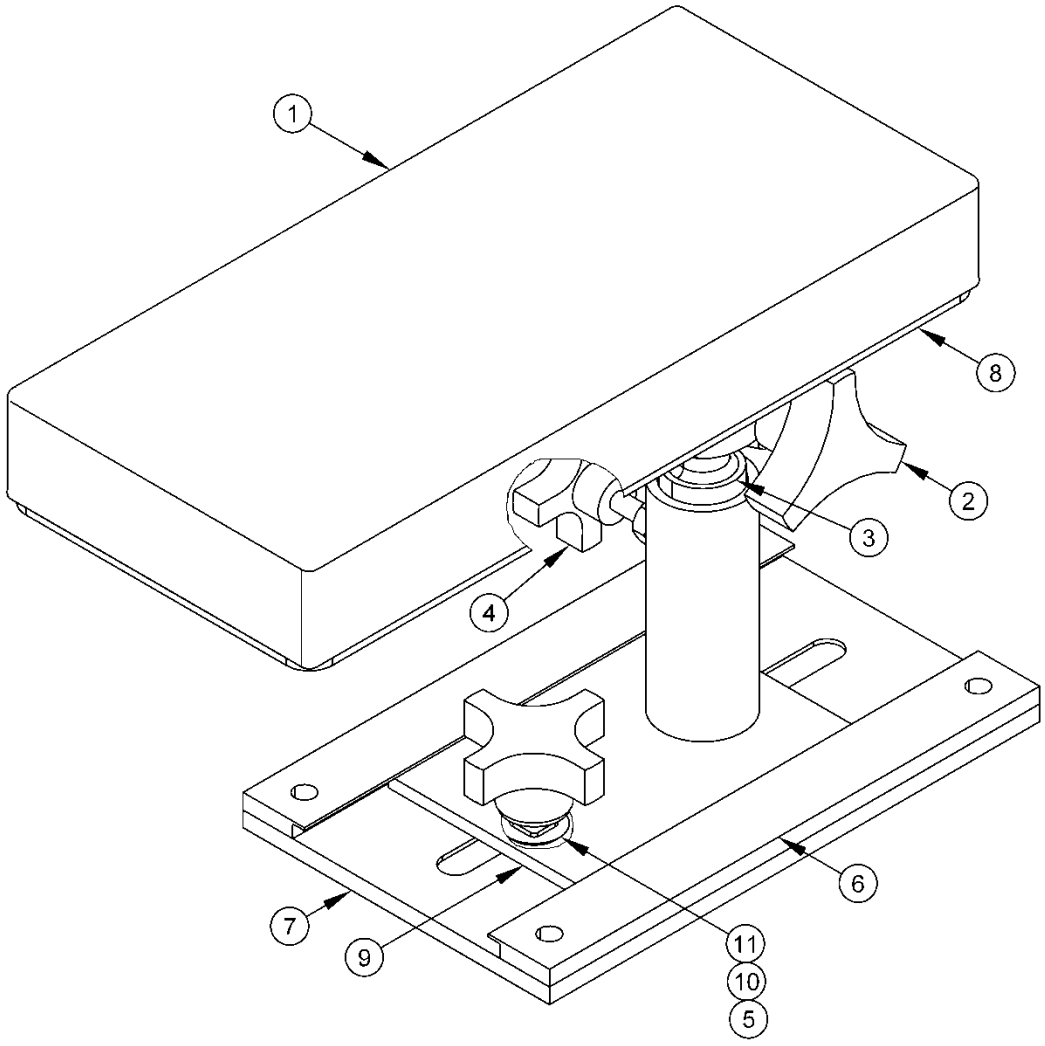
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-0511	KIT, Door, Access, 30 and 32 Yd.	-	REF
1	005-4134-008	HINGE, Bullet	-	2
2	047-2168-009	CAPSCREW, Button Head, Hex Socket, 1/2”-13 Thd. x 1-1/2”,	-	1
		Gr. 8, Zinc Plated	-	1
3	070-1579	HANDLE, Grip, Greased, Sump Door	-	1
4	070-1807	HANDLE, Door, Access	-	1
5	113-0327	DOOR, Sump	-	1
6	311-0166	BRACKET, Clamp	-	1
-7	-	NA	-	REF
8	113-2737	Roof, Door Kit, 30 and 32 Yd.	-	1

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UNIVERSAL PANAVISE ARM REST

372-0550-002



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UNIVERSAL PANAVISE ARM REST

372-0550-002

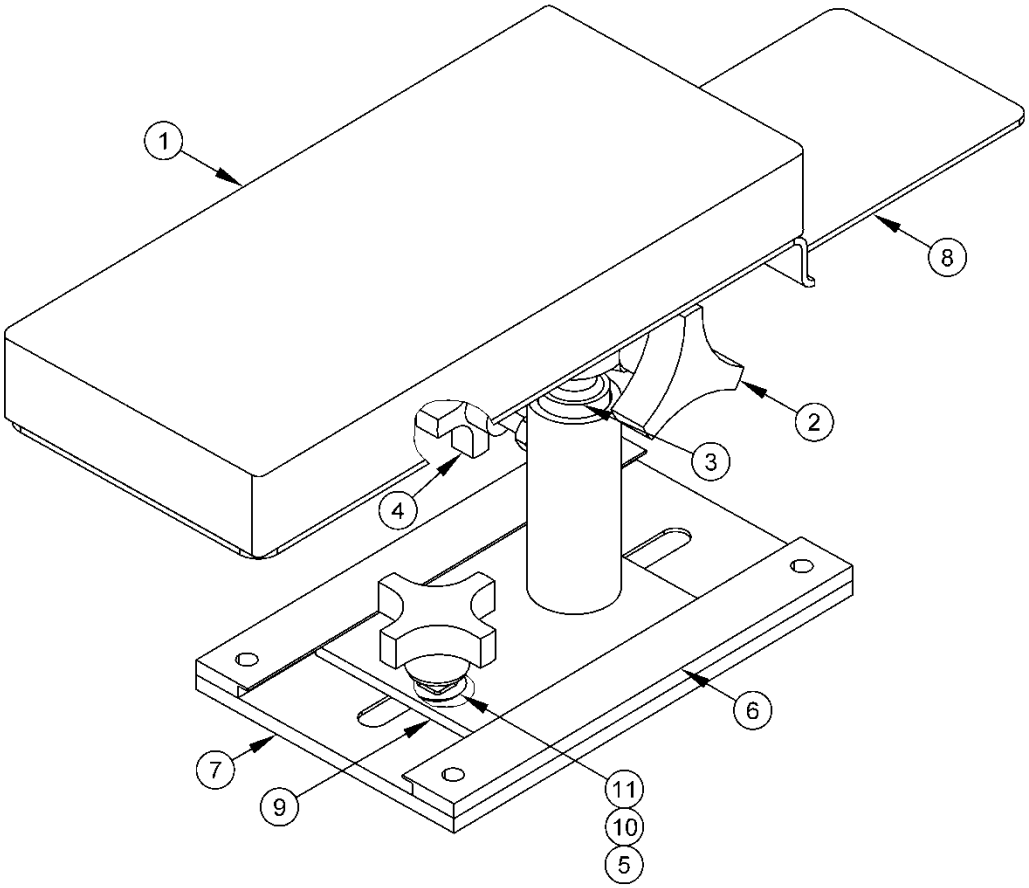
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-0550-002	ARM REST, Panavise (No Controller)	-	REF
1	014-1859-001	PAD, Arm Rest	-	1
2	036-1885	PANAVISE	-	1
3	048-7178	PIVOT, Panavise	-	1
4	070-1810	KNOB, Stud, 1/4”-20 Thd.	-	1
5	070-1811	KNOB, 3/8”-16, Thd.	-	1
6	234-1967	PLATE, Guide, Panavise	-	2
7	311-1815	PLATE, Mtg., Arm Rest	-	1
8	311-1816-002	PLATE, Mtg.,Pad	-	1
9	372-0550-001	ASSEMBLY, Base, Arm Rest (See Pg. 7117)	-	1
10	FS520900	WASHER, Flat, 3/8” SAE, Plain	-	1
11	FSP020920	BOLT, Carriage, 3/8” x 1”	-	1

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UNIVERSAL PANAVISE ARM REST

372-0550-003



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UNIVERSAL PANAVISE ARM REST

372-0550-003

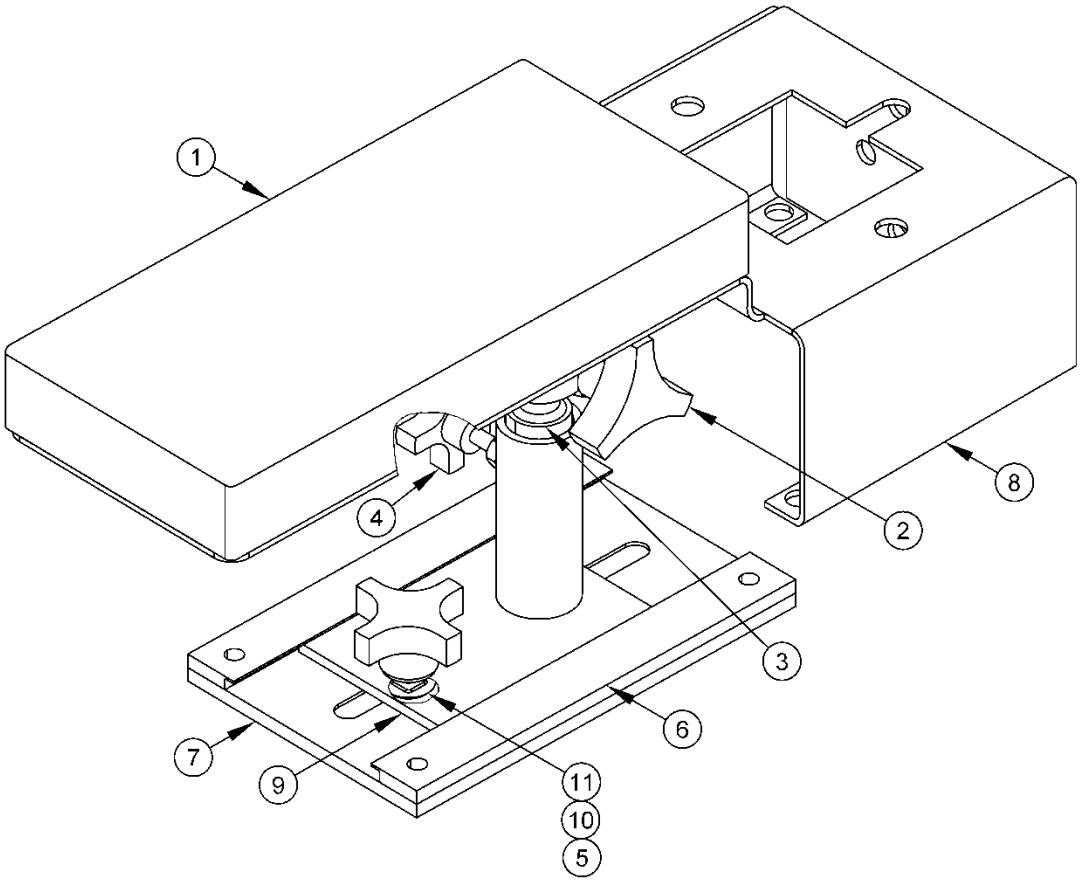
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-0550-003	ARM REST, Panavise, Universal	-	REF
1	014-1859-001	PAD, Arm Rest	-	1
2	036-1885	PANAVISE	-	1
3	048-7178	PIVOT, Panavise	-	1
4	070-1810	KNOB, Stud, 1/4”-20 Thd.	-	1
5	070-1811	KNOB, 3/8”-16, Thd.	-	1
6	234-1967	PLATE, Guide, Panavise	-	2
7	311-1815	PLATE, Mtg., Arm Rest	-	1
8	311-1816-003	PLATE, Mtg., Pad	-	1
9	372-0550-001	ASSEMBLY, Base, Arm Rest (See Pg. 7117)	-	1
10	FS520900	WASHER, Flat, 3/8” SAE, Plain	-	1
11	FSP020920	BOLT, Carriage, 3/8” x 1”	-	1

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UNIVERSAL PANAVISE ARM REST

372-0550-004



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UNIVERSAL PANAVISE ARM REST

372-0550-004

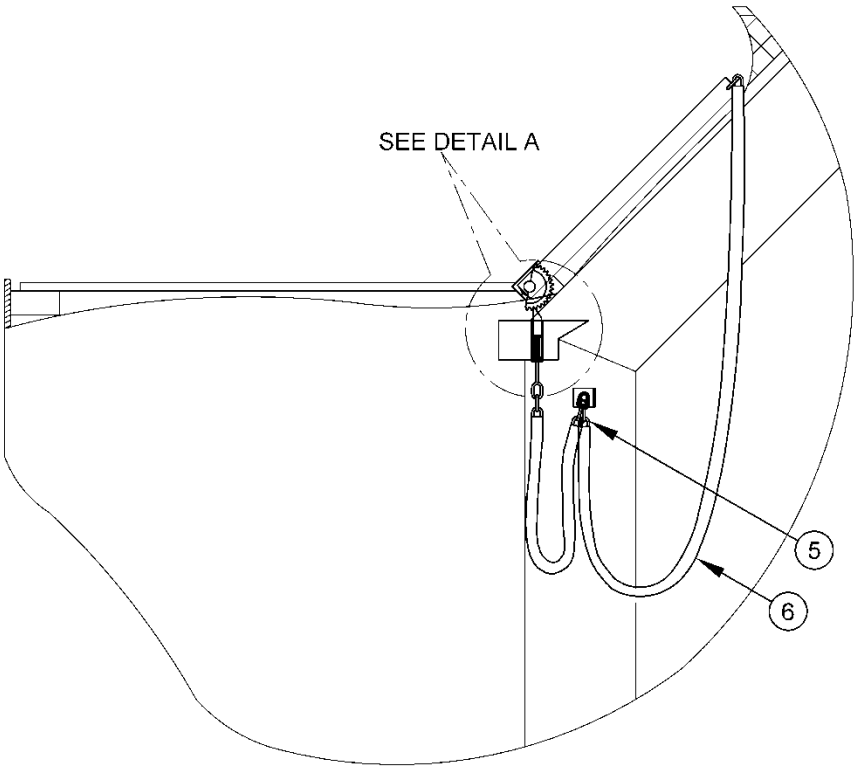
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-0550-004	ARM REST, Panavise, Universal	-	REF
1	014-1859-001	PAD, Arm Rest	-	1
2	036-1885	PANAVISE	-	1
3	048-7178	PIVOT, Panavise	-	1
4	070-1810	KNOB, Stud, 1/4”-20 Thd.	-	1
5	070-1811	KNOB, 3/8”-16, Thd.	-	1
6	234-1967	PLATE, Guide, Panavise	-	2
7	311-1815	PLATE, Mtg., Arm Rest	-	1
8	311-1816-004	PLATE, Mtg., Pad	-	1
9	372-0550-001	ASSEMBLY, Base, Arm Rest (See Pg. 7117)	-	1
10	FS520900	WASHER, Flat, 3/8” SAE, Plain	-	1
11	FSP020920	BOLT, Carriage, 3/8” x 1”	-	1

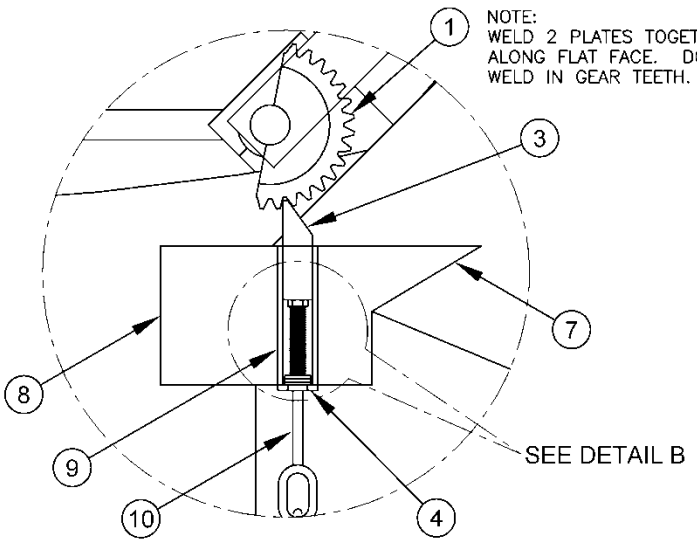
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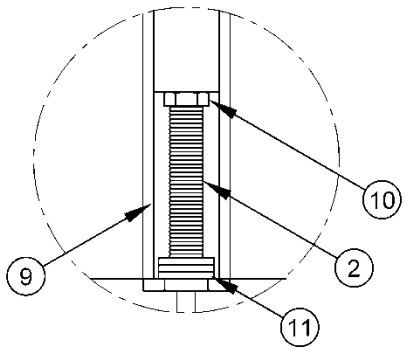
HOPPER LOCK KIT

372-0649





DETAIL A



DETAIL B

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HOPPER LOCK KIT

372-0649

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-0649	KIT, Lock, Hopper	-	REF
1	007-1537	GEAR, Lock, Cover, Hopper	-	2
2	019-1562	SPRING	-	1
3	021-4058	LATCH, Lock, Hopper	-	1
4	042-2047	CAP, End	-	1
5	043-0801	ASSEMBLY, Chain	-	1
6	054-8950-009	TUBE, Shrink, Heat	-	3.75’
7	126-6171	GUSSET, Rear	-	1
8	126-6172	GUSSET, Front	-	1
9	177-4976	TUBE, Latch, Hopper	-	1
10	FS070750	HHCS, 1/4"-20 x 4”, Gr. 5	-	1
11	FS510750	WASHER, Flat, Std., Plain, 1/4" x 4”	-	3

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HOPPER DROP ADD FLOOR KIT

372-0693

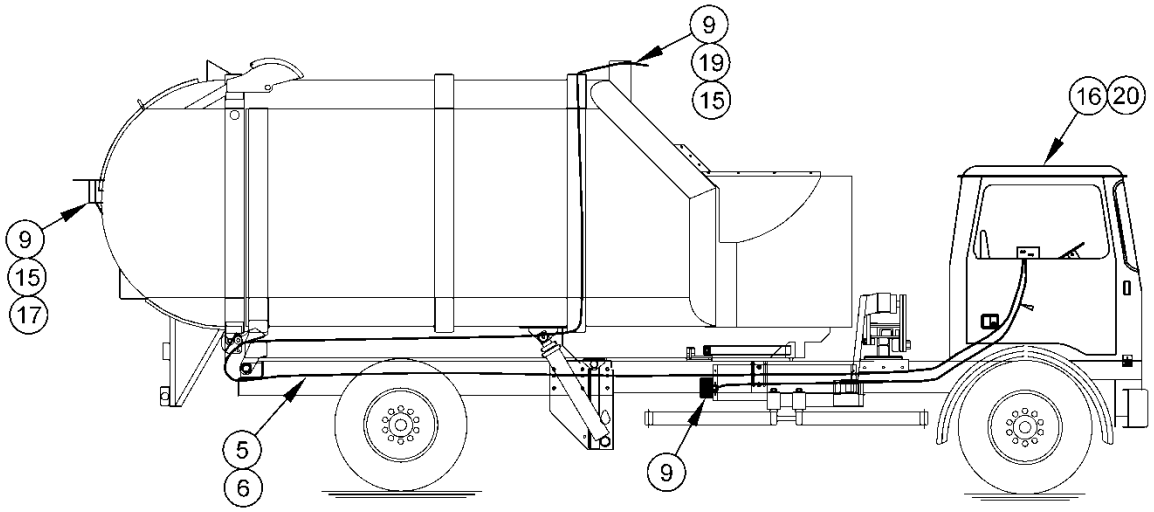
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-0693	KIT, Floor, Drop Add, Hopper	-	REF
-1	-	NA	-	REF
-2	234-1841	FLOOR, Hopper, QT100	-	1

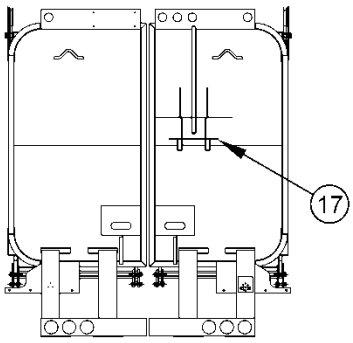
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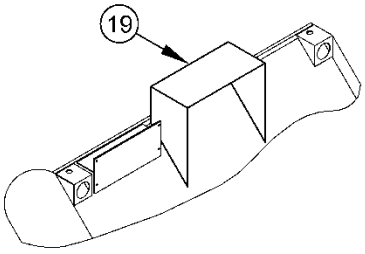
3-CAMERA KIT

372-0787

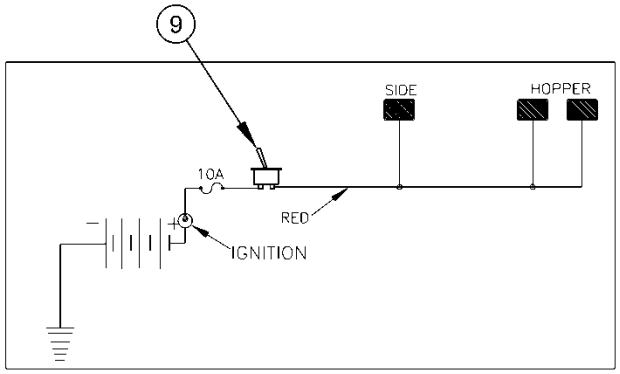




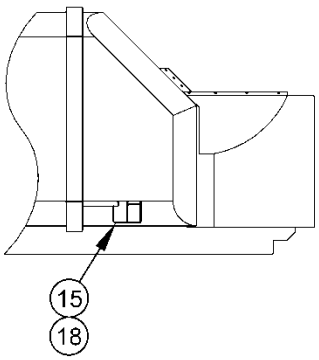
TAILGATE CAMERA BRACKET



HOPPER CAMERA BRACKET



WORKLIGHT WIRING DETAIL



LOADER CAMERA BRACKET

SHEET 1 OF 2

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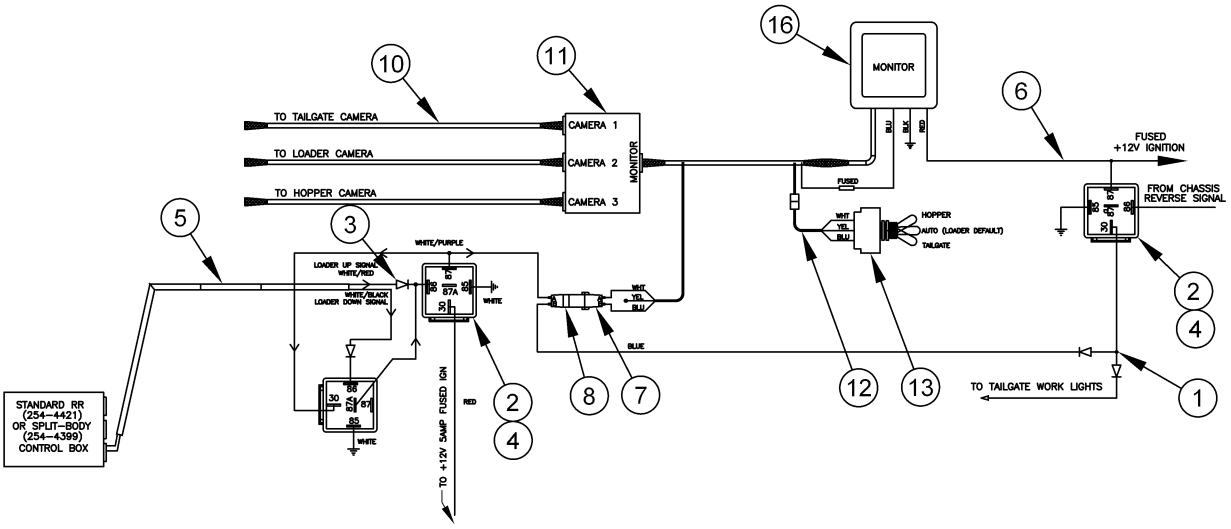
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3-CAMERA KIT

372-0787



SHEET 2 OF 2

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3-CAMERA KIT

372-0787

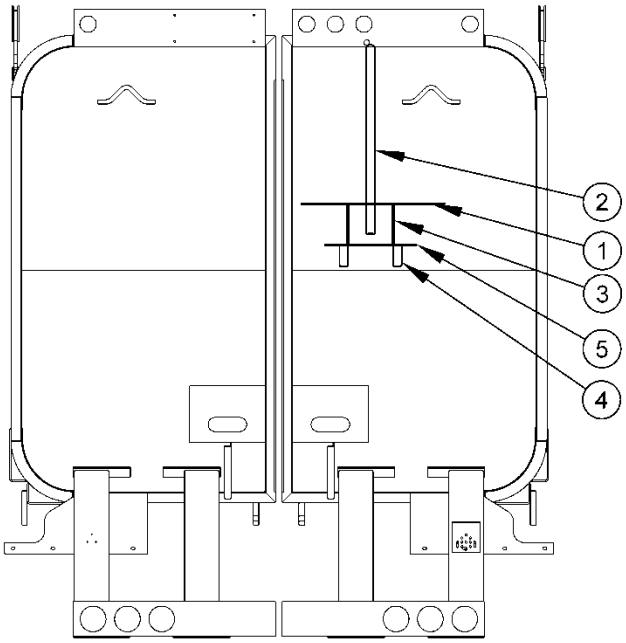
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-0787	KIT, 3-Camera	-	REF
1	108-1110-002	CONNECTOR, Butt, 14-16 Ga.	-	10
2	108-2050	DISCONNECT, Quick, Terminal, w/Heat Shrink, Female	-	15
3	108-2648	DIODE, Silicon Rectifier	-	4
4	108-4643	RELAY, Throttle	-	3
5	108-5034-001	LOOM, Electrical, Split Convoluted, Plastic, 1/4”	-	200’
6	108-5233-009	WIRE, Red, 16 Ga.	-	100’
7	108-6461-011	PLUG, Str., 2-Way, Deutsch DT Series	-	1
8	108-6461-012	RECEPTACLE, Str., 3-Way, Deutsch DT Series	-	1
9	115-0916	LIGHT, Trapezoidal Beam	-	5
10	161-0105-003	CABLE, CVXLP20M	-	REF
11	161-0126-005	BOX, Switcher, CVS300	-	REF
12	161-0126-006	CABLE, Toggle, CVS5M	-	REF
13	161-0126-007	SWITCH, Toggle, CVSSW3	-	REF
-14	161-0236	KIT, Set-Up, 3-Camera (See Pg. 7277)	-	1
15	161-0236-001	CAMERA, 220XL	-	REF
16	161-0236-002	MONITOR, CVM700	-	REF
17	272-8663	INSTALLATION, Bracket, Camera, Tailgate (See Pg. 7259)	-	1
18	311-0448	BRACKET, Camera, Loader	-	1
19	311-0727	BRACKET, Camera, Hopper	-	1
20	FS500420	SCREW, Tek, 1/8” x 1”	-	2

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TAILGATE CAMERA BRACKET INSTLLATION
272-8663



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3-CAMERA SET-UP KIT

161-0236

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	161-0236	KIT, Set-Up, 3-Camera	-	REF
-1	161-0105-003	CABLE, Camera	-	3
-2	161-0126-005	SWITCHER, 3-Way	-	1
-3	161-0126-006	CABLE, Toggle	-	1
-4	161-0126-007	SWITCH, Toggle	-	1
-5	161-0236-001	CAMERA	-	3
-6	161-0236-002	MONITOR, B and W, 7”	-	1

TAILGATE CAMERA BRACKET INSTLLATION

272-8663

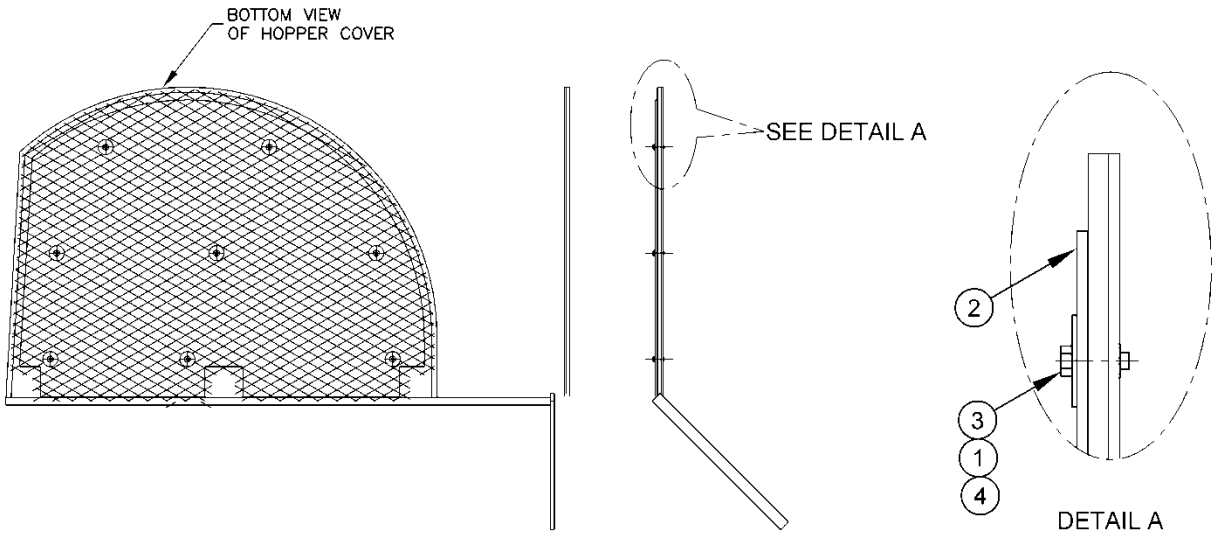
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	272-8663	INSTALLATION, Bracket, Camera, Tailgate	-	REF
1	035-2892	GUARD, Light, Work	-	1
2	035-3101	GUARD, Cable	-	1
3	211-6289	BRACE	-	2
4	211-6290	GUSSET	-	2
5	311-0380	BASE, Bracket, Camera	-	1

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HOPPER LINER LID KIT

372-0945



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HOPPER LINER LID KIT

372-0945

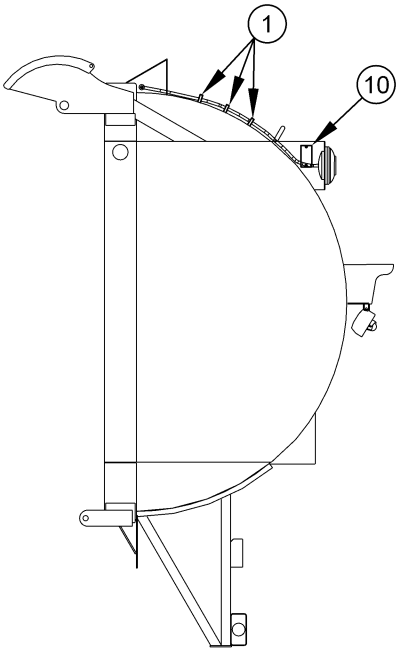
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-0945	KIT, Lid, Liner, Hopper	-	REF
1	055-1458	WASHER, 2”, Fender	-	16
2	094-2645	LINER, Plastic, Lid, Hopper	-	1
3	FSP070922	HHCS, 3/8”-16 x 1-1/4”, Gr. 5, Plated	-	8
4	FSP230900	NUT, Lock, 3/8”-16, Gr. 5, Plated	-	8

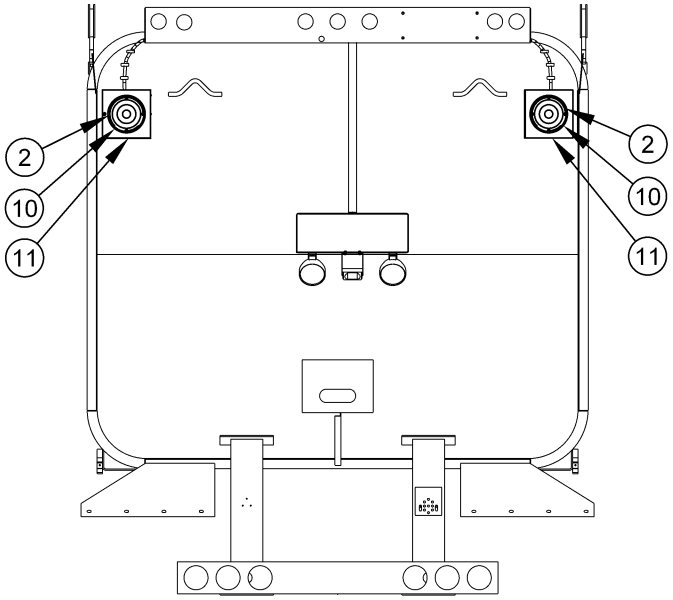
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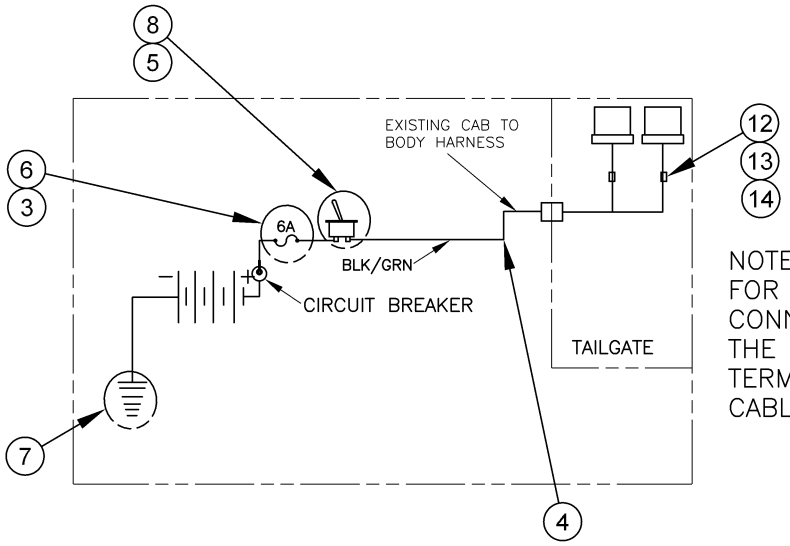
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7” FLASHING LEDS KIT

372-0965







NOTE: SEE MATRIX FOR CORRECT MALE CONNECTOR AND THE NUMBER OF MALE TERMINIALS AND CABLE SEALS.

WIRING DETAIL

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7” FLASHING LED KIT

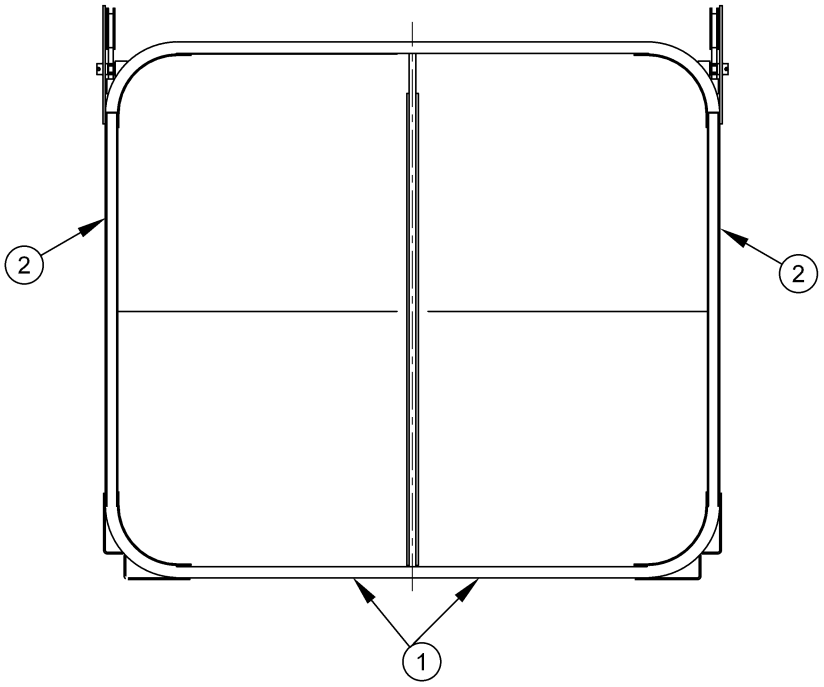
372-0965

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-0965	KIT, LED, 2-Flashing, 7”	-	REF
-	372-0965-A03	KIT, LED, Tailgate, 2-Flashing, Amber, 7”, 3 Yd.	A	REF
-	372-0965-R03	KIT, LED, Tailgate, 2-Flashing, Red, 7”, 3 Yd.	B	REF
-	372-0965-A04	KIT, LED, Tailgate, 2-Flashing, Amber, 7”, 4 Yd.	C	REF
-	372-0965-R04	KIT, LED, Tailgate, 2-Flashing, Red, 7”, 4 Yd.	D	REF
-	372-0965-A06	KIT, LED, Tailgate, 2-Flashing, Amber, 7”, 6 or 7 Yd.	E	REF
-	372-0965-R06	KIT, LED, Tailgate, 2-Flashing, Red, 7”, 6 or 7 Yd.	F	REF
1	036-1580-009	CLAMP, “J”, 5/8”	-	6
2	047-2309	INSERT, Aluminum, 10/32" Thd.	-	8
3	108-0647	HOLDER, Fuse, In-Line	-	1
4	108-1110-002	CONNECTOR, Butt, 14-16 Ga.	-	5
5	108-2050	DISCONNECT, Quick, Terminal, w/Heat Shrink, Female	-	2
6	108-2559-002	FUSE, 6 Amp., 3/4"	-	1
7	108-5702-011	TERMINAL, Ring	-	3
8	108-6815	SWITCH, Toggle	-	1
-9	108-7761	FLASHER	-	1
10	115-1245-001	LIGHT, Amber, Round, 7” (See SM 7)	A, C, E	2
-10a	115-1245-002	LIGHT, LED, Red, 7”	B, D, F	3
11	311-2138-003	LIGHT, LED, Amber/Red, 7”	A	2
-11a	311-2138-003	LIGHT, LED, Amber/Red, 7”	B	3
-11b	311-2138-004	LIGHT, LED, Amber/Red, 7”	C	2
-11c	311-2138-004	LIGHT, LED, Amber/Red, 7”	D	3
-11d	311-2138-006	LIGHT, LED, Amber/Red, 7”	E	2
-11e	311-2138-006	LIGHT, LED, Amber/Red, 7”	F	3
12	108-4827-003	CONNECTOR, Male, 2 Way, Packard	A, C, E	2
-12a	108-4827-005	CONNECTOR, Male, 3 Way, Packard	B, D, F	3
13	108-4827-111	TERMINAL, Male, 16-14 AWG, Packard	A, C, E	2
-13a	108-4827-111	TERMINAL, Male, 16-14 AWG, Packard	B, D, F	3
14	108-4827-132	SEAL, Cable, 16-14 AWG	A, C, E	2
-14a	108-4827-132	SEAL, Cable, 16-14 AWG	B, D, F	3

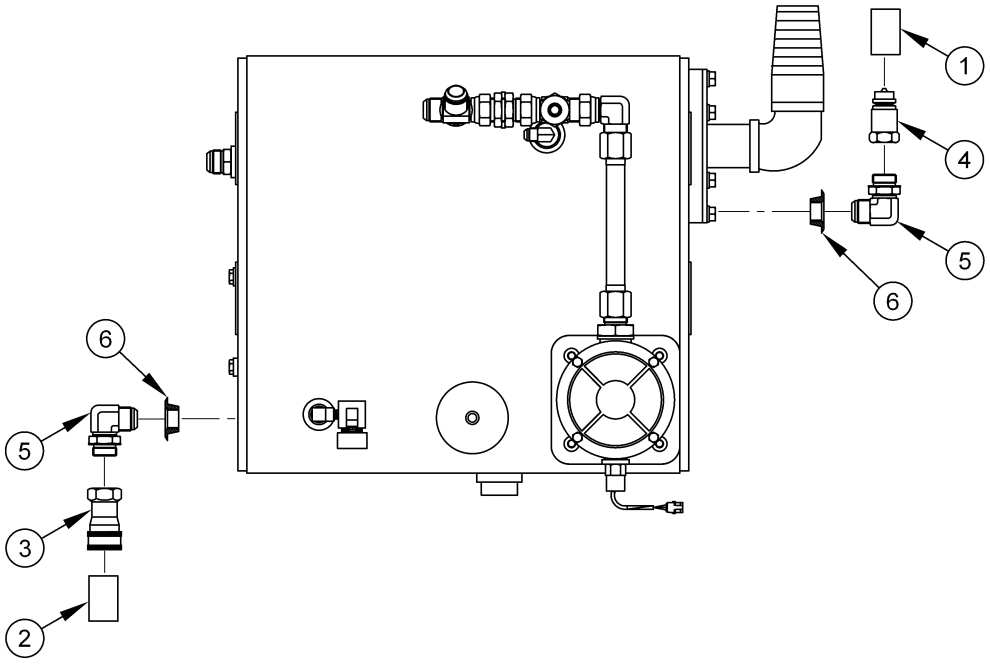
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TAILGATE SEAL KIT
372-0977



ADD-ON QUICK DISCONNECT KIT
372-0982



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TAILGATE SEAL KIT
372-0977

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-0977	KIT, Tailgate Seal	-	REF
1	022-3752	SEAL, Tailgate, Std.	-	2
2	064-3708	GUIDE, Side, Tailgate Seal	-	2

ADD-ON QUICK DISCONNECT KIT
372-0982

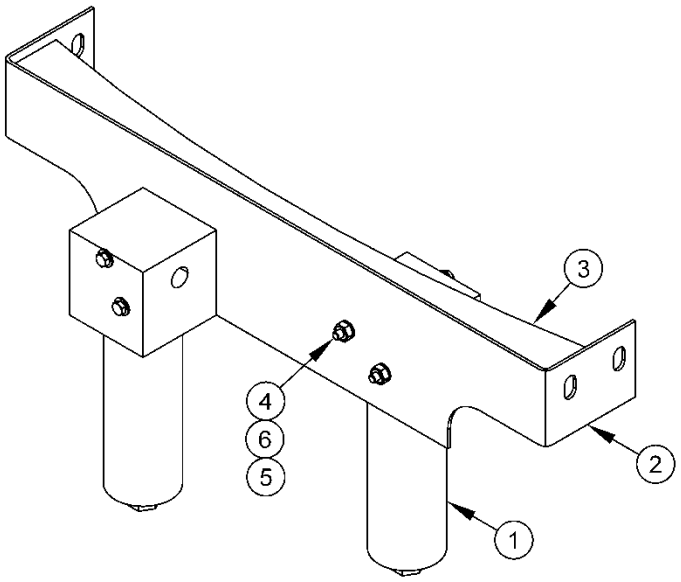
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-0982	KIT, Quick Disconnect, Add-On	-	REF
1	045-1013-003	CAP, Dust, 3/4", QDC Male	-	1
2	045-1347	CAP, Plug, 3/4", QDC Male	-	1
3	045-1385-001	DISCONNECT, Quick, Female, 3/4"	-	1
4	045-1385-002	DISCONNECT, Quick, Male, 3/4"	-	1
5	054-9317-008	ELBOW, 90°, Male, 3/4"	-	2
6	074-1826-005	FLANGE, Tank, 3/4" NPT	-	2

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DUAL HIGH PRESSURE FILTER KIT

372-1200



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DUAL HIGH PRESSURE FILTER KIT

372-1200

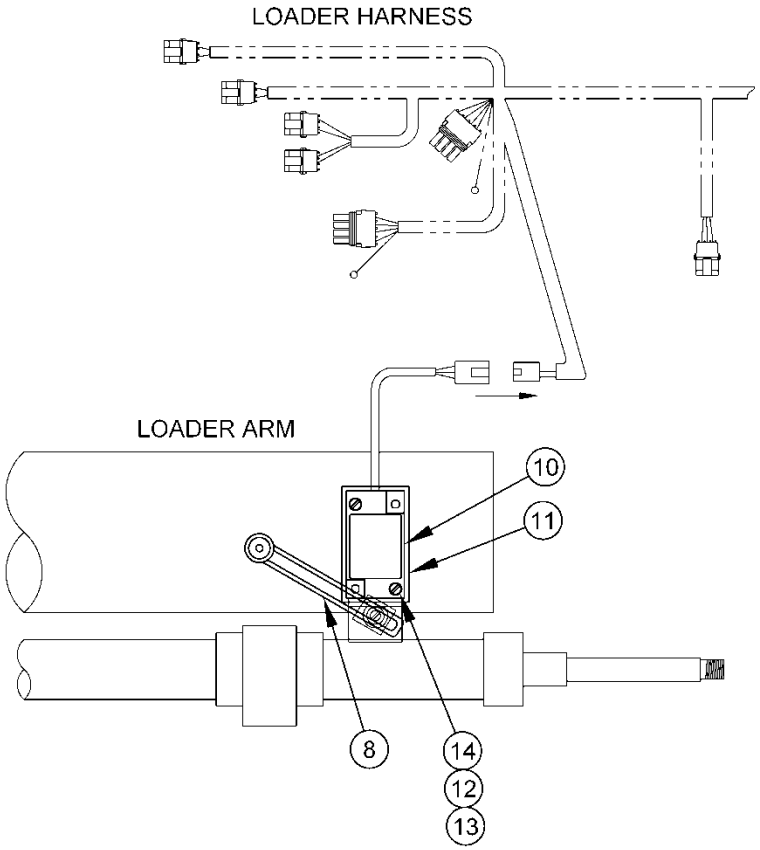
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-1200	KIT, Filter, High Pressure, Dual	-	REF
1	075-0890	FILTER, Pressure, High	-	2
2	311-2317	BRACKET, Mount, Oil Filter, Dual	-	1
3	311-2318	PLATE, Stiffener, Dual Filter	-	1
4	FS070964	HHCS, 3/8”-16 x 5-1/2”, Gr. 5	-	4
5	FSP230900	NUT, Lock, 3/8”-16, Gr. 5, Plated	-	4
6	FSP520900	WASHER, Flat, 3/8’’, SAE, Plain	-	8

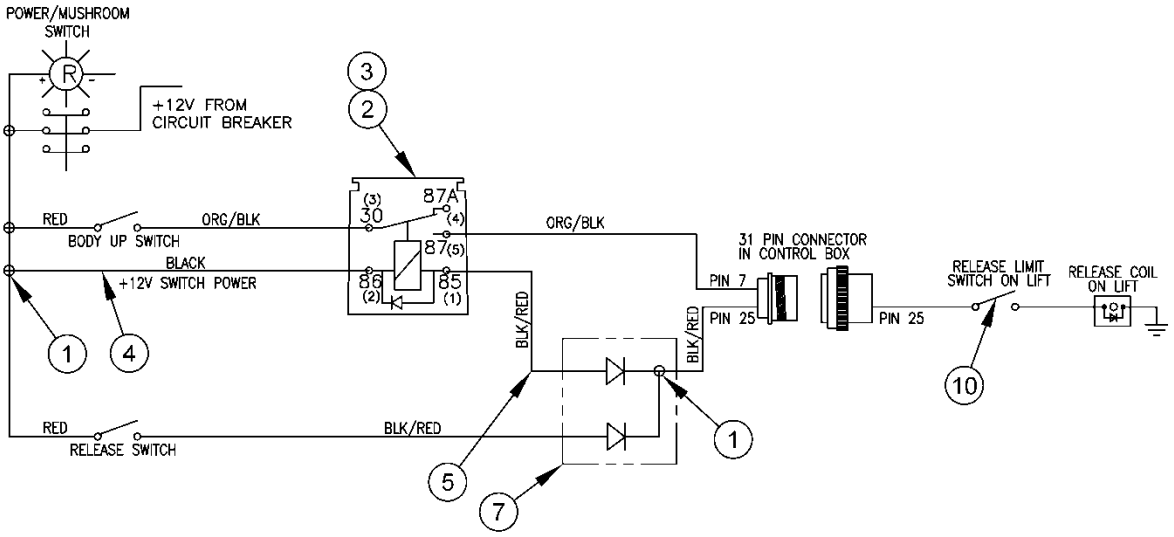
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BODY UP INTERLOCK KIT WITH LIMIT SWITCH

372-1283-001





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BODY UP INTERLOCK KIT WITH LIMIT SWITCH

372-1283-001

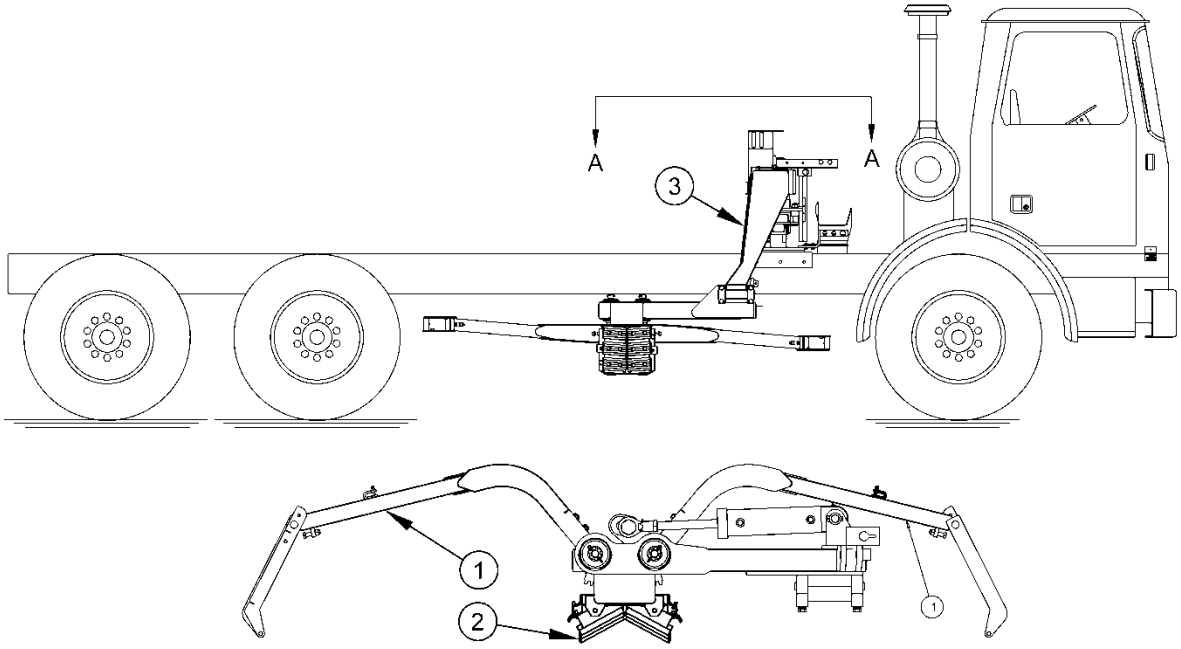
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-1283-001	KIT, Interlock, Body Up, w/Limit Switch	-	REF
1	108-1110-002	CONNECTOR, Butt, 14-16 Ga.	-	2
2	108-2050	DISCONNECT, Quick, Terminal, w/Heat Shrink, Female	-	6
3	108-4643	RELAY, Throttle	-	1
4	108-5233-017	WIRE, Black, 16 Ga.	-	1’
5	108-5233-020	WIRE, Black/Red	-	1’
-6	-	NA	-	REF
7	108-5705	ASSEMBLY, Diode, Blocking	-	1
8	108-2096	SWITCH, Limit, Head, Actuator Arm	-	1
-9	-	NA	-	REF
10	108-7381	SWITCH, Limit, Heavy Duty	-	1
11	211-9910	BRACKET, Limit Switch, 7 Ga., HRS	-	1
12	FSP400430	SCREW, Mach, 1/8” x 2”, Gr. 5, Plated	-	2
13	FSP131024	NUT, Hex Head, 7/16” x 1-1/2”	-	2
14	FSP540700	WASHER, Lock, 1/4"	-	2

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30/110 HUGGER GRABBER ARM ASSEMBLY

372-1302



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30/110 HUGGER GRABBER ARM ASSEMBLY

372-1302

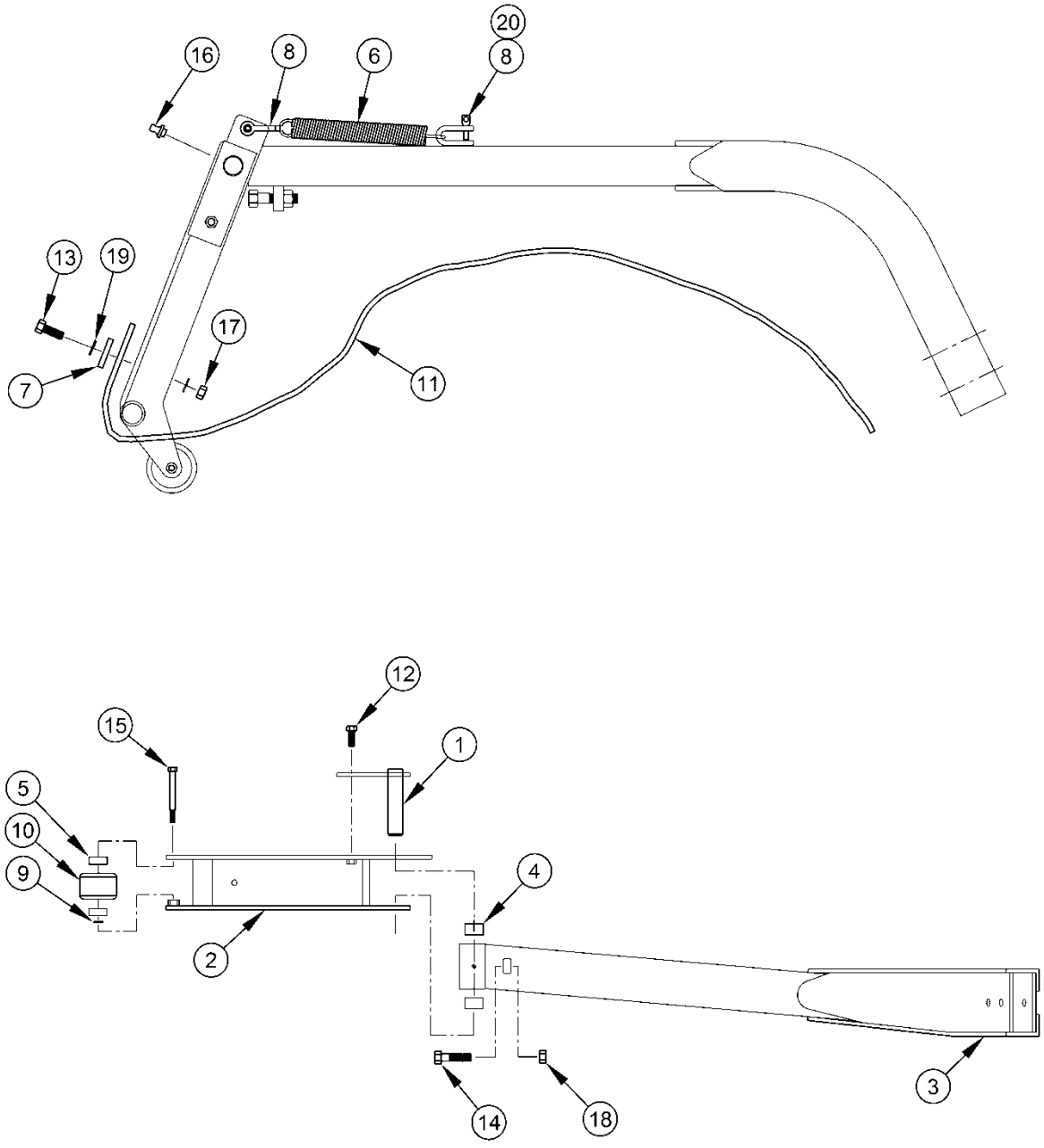
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-1302	ASSEMBLY, Grabber Arm, 30/110 Hugger	-	REF
1	093-2307	ASSEMBLY, Arm, 30/110, Grabber, Hugger (See Pg. 7273)	-	2
2	272-8083	KIT, Plate, Breast (See Pg. 7275)	-	1
3	372-0346	LOADER	-	1

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HUGGER GRABBER 30/110 ARM ASSEMBLY

093-2307



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HUGGER GRABBER 30/110 ARM ASSEMBLY

093-2307

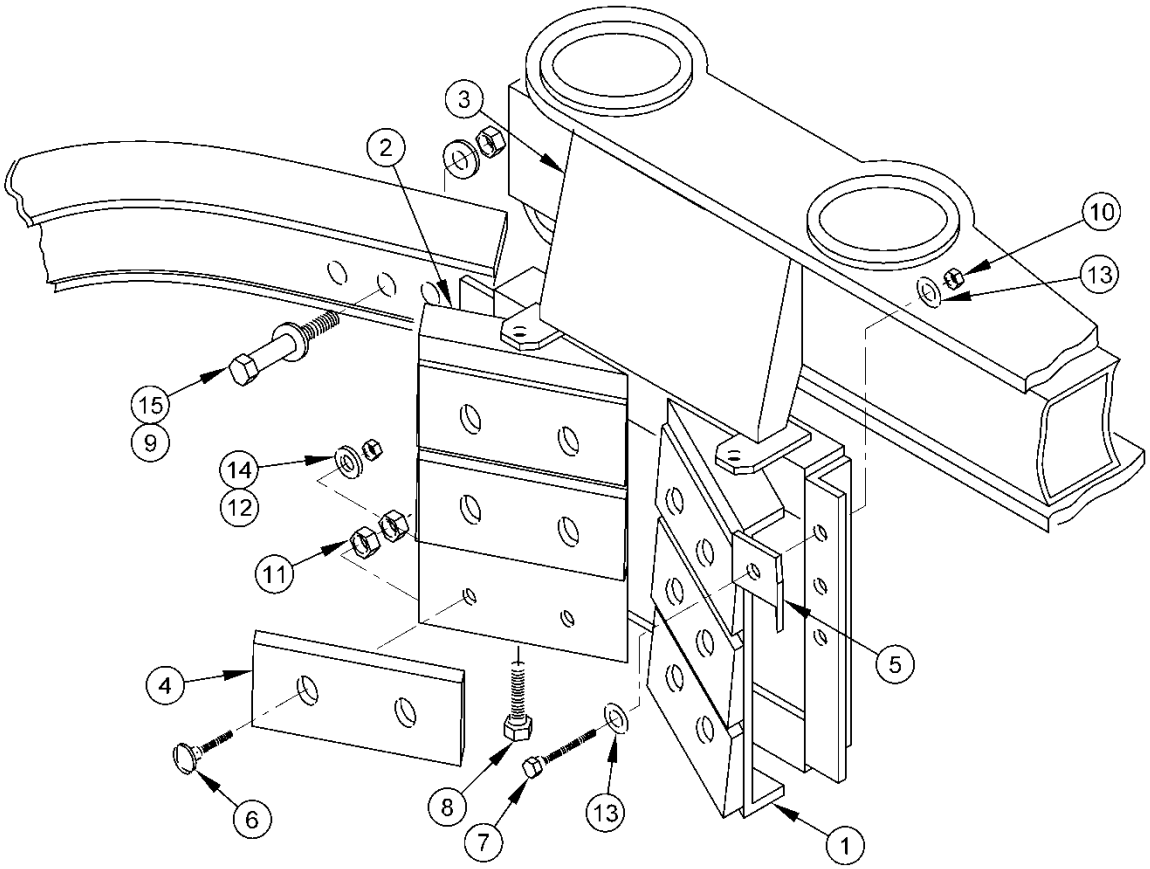
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	093-2307	ASSEMBLY, Arm, 30/110, Grabber, Hugger	-	REF
1	048-5853	ASSEMBLY, Pin (Item Welded)	-	1
2	093-2304	ARM, Weldement, Snubber	-	1
3	093-2305	ARM, Weldment, Grabber	-	1
4	003-4448	BUSHING, Bronze	-	2
5	015-2928	SPACER, Roller	-	2
6	019-1404	SPRING	-	1
7	036-1636	PLATE, Clamp	-	1
8	043-0803	SHACKLE, 1/4”	-	1
9	055-1391-005	WASHER, Steel, Hardened, 1/2”	-	2
10	062-0717	ROLLER	-	1
11	071-0837	BELT, Hugger Grabber	-	1
12	FS070920	HHCS, 3/8”-16 x 1”, Gr. 5	-	1
13	FS070924	HHCS, 3/8” x 1-1/2”, Gr. 5	-	1
14	FS071130	HHCS, 1/2”-13 x 1”, Gr. 5	-	1
15	FS071144	HHCS, 1/2”-13 x 3-1/2”, Gr. 5	-	1
16	FS190700	ZERK, Grease	-	1
17	FS230900	NUT, Lock, 3/8”	-	1
18	FS231100	NUT, Lock,1/2”	-	1
19	FS520900	WASHER, Flat, 3/8”	-	2
20	FS540700	WASHER, Lock, 1/4”	-	1

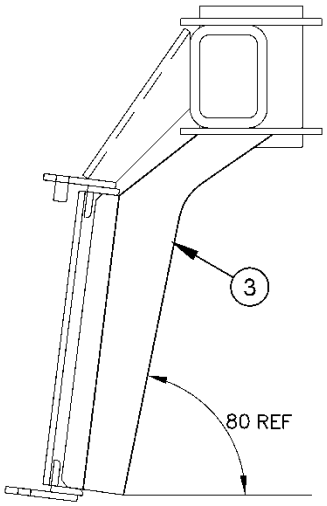
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BREAST PLATE KIT

272-8083





SECTION THRU DUMP ARM
BETWEEN GEAR SHAFTS

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BREAST PLATE KIT

272-8083

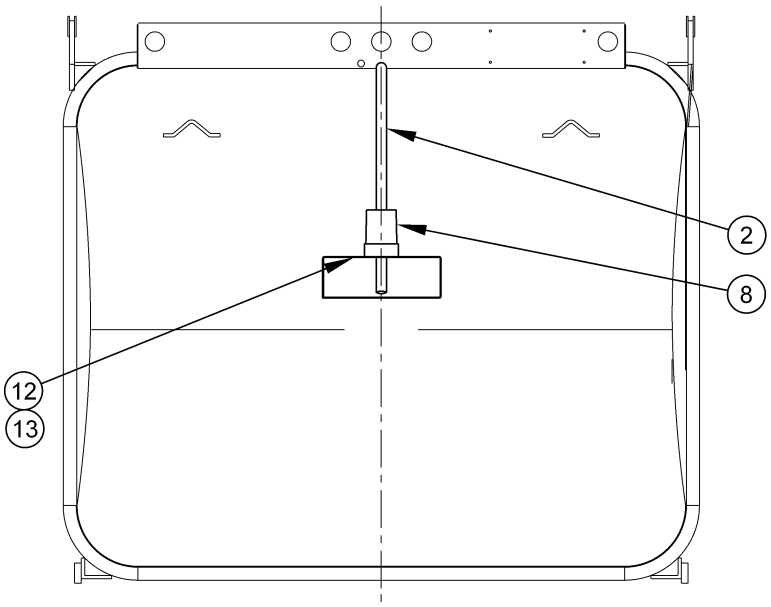
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	272-8083	KIT, Plate, Breast	-	REF
1	134-8741	WELDMENT, Face Plate, CS	-	1
2	134-8742	WELDMENT, Face Plate, SS	-	1
3	177-3594	WELDMENT, Face, Plate, Mtg., Base	-	1
4	014-1847	BUMPER	-	6
5	064-3216	GUIDE, Clamp, Belt, Hugger Grabber	-	2
6	FS020920	BOLT, Carriage, 3/8” x 1”	-	12
7	FS070830	HHCS, 5/16”-18 x 2”, Gr. 5, Plated	-	2
8	FS071124	HHCS, 1/2‘’-13 x 1-1/2'', Gr. 5	-	2
9	FS071134	HHCS, 1/2''-13 x 2-1/2”, Gr. 5	-	4
10	FS230800	NUT, Lock, 5/16”-18, Gr. 5	-	2
11	FS231100	NUT, Lock, 1/2”-13, Gr. 5	-	6
12	FS280900	NUT, Hex, 3/8”-16, Plain	-	12
13	FS520800	WASHER, Flat, 5/16”, SAE, Plain	-	4
14	FS520900	WASHER, Flat, 3/8” SAE, Plain	-	12
15	FS521100	WASHER, Flat, 1/2'', SAE, Plain	-	8

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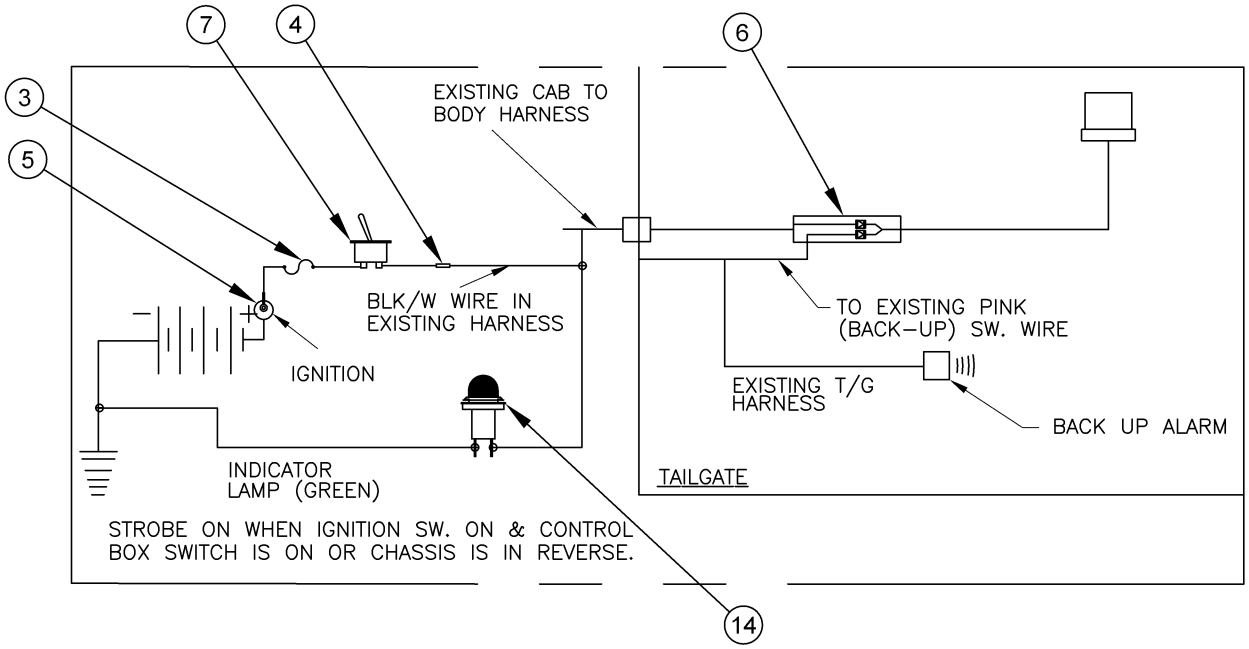
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STROBE LIGHT KIT WITH INDICATOR LAMP

372-1413



BRACKET LAYOUT-SINGLE STROBE &/OR CAMERA



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STROBE LIGHT KIT WITH INDICATOR LAMP

372-1413

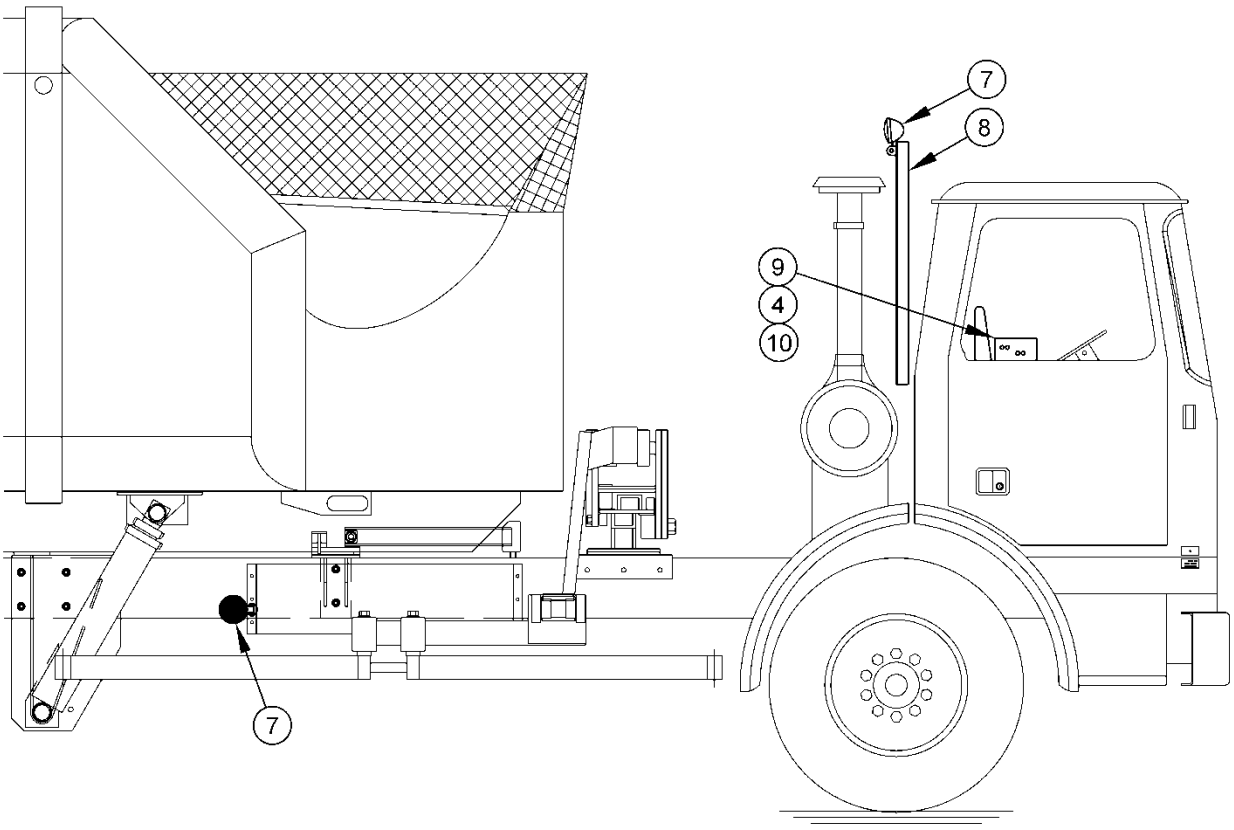
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-1413	KIT, Strobe Light, w/Indicator Lamp	-	REF
-1	-	NA	-	REF
2	035-3102-003	GUARD, Harness, 30 Yd.	-	1
3	108-0647	HOLDER, Fuse, In-Line	-	1
4	108-1110-002	CONNECTOR, Butt, 14-16 Ga.	-	2
5	108-5702-011	TERMINAL, Ring	-	3
6	108-5705	ASSEMBLY, Diode, Blocking	-	1
7	108-6815	SWITCH, Toggle	-	1
8	115-1232	KIT, Strobe Light w/Brush Guard (See SM 7)	-	1
-9	-	NA	-	REF
-10	212-2029	DECAL, Strobe Light	-	REF
-11	263-0279	HARNESS, Tailgate (See SM 10)	-	REF
12	FS290500	NUT, Jam, 5/32”-24	-	3
13	FS420520	SCREW, Mach., Rd. Hd., 5/32”-24 x 1”	-	3
14	115-0886	LIGHT, Green (See SM 7)	-	1

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HOPPER/GRABBER WORK LIGHT WITH INDICATOR LAMP

372-1414



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HOPPER/GRABBER WORK LIGHT WITH INDICATOR LAMP

372-1414

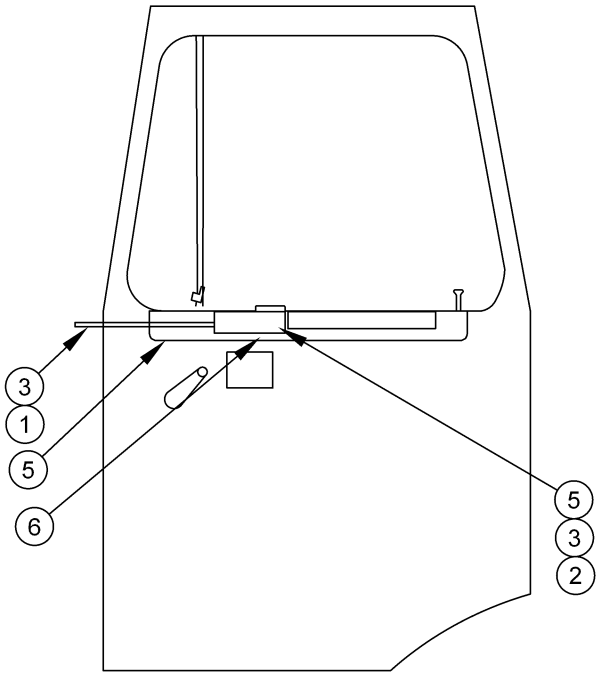
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-1414	LIGHT, Work, Hopper/Grabber, w/Indicator Lamp	-	REF
-1	036-1249	CLAMP, Wire Loom	-	6
-2	036-1640-208	TIE, Wire, 7-1/25”, #50	-	20
-3	108-1110-002	CONNECTOR, Butt, 14-16 Ga.	-	2
4	108-6815	SWITCH, Toggle	-	1
-5	108-5034-001	LOOM, Electrical, Split Convoluted, Plastic, 1/4”	-	30’
-6	108-5233-017	WIRE, Black, 16 Ga.	-	30’
7	115-0642	LIGHT, Flood (Includes Hardware)	-	2
8	211-9082	BRACKET, Mtg., Work Light, 1/4" x 2” x 2” HR Angle	-	1
9	212-1600	DECAL, Flood Light	-	REF
10	115-0886	LIGHT, Green (See SM 7)	-	1

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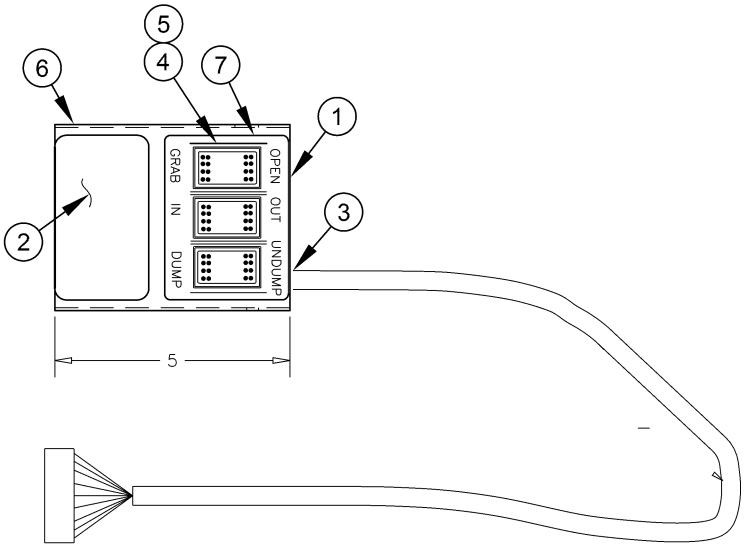
CS SOFT TOUCH CONTROL KIT

372-1428



CS SOFT TOUCH CONTROL ASSEMBLY

254-4517



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CS SOFT TOUCH CONTROL KIT

372-1428

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-1428	KIT, Control, Soft Touch, CS	-	REF
1	036-1122-008	CLAMP, Tube, 1/2'' x 13/32”	-	12
2	047-2151-011	SCREW, Tek, 1/4”-14 x 1”	-	14
3	047-2316-005	NUT, Wing, Steel, 1/4"-20	-	2
-4	254-4517	ASSEMBLY, Control, Soft Touch, CS (See Pg. 7281)	-	1
5	311-0163	BRACKET, Mtg.	-	1
6	FS070715	HHCS, 1/4”-20 x 3/4”, Gr. 5	-	2

CS SOFT TOUCH CONTROL ASSEMBLY

254-4517

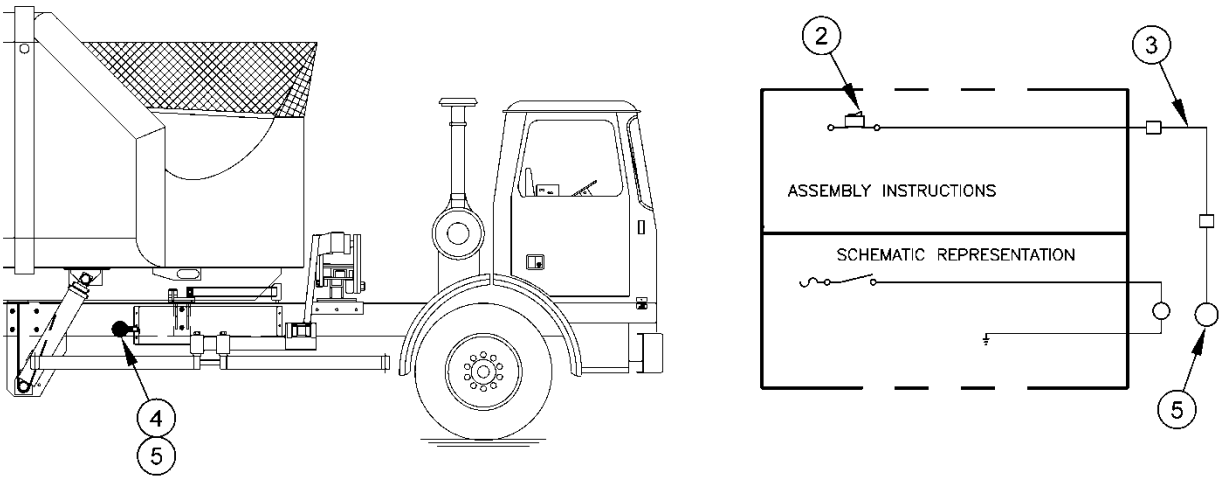
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	254-4517	ASSEMBLY, Control, Soft Touch, CS	-	REF
1	254-4136-001	BASE, Switch	-	1
2	254-4136-002	PAD, Arm, Gray, Upholstered	-	1
3	108-1759-002	CONNECTION, Watertight	-	1
4	108-7544-001	SWITCH, Rocker, Soft Touch	-	3
5	108-7690	GUARD, Switch, Soft Touch	-	3
6	108-6884	PLUG, Dummy	-	1
7	212-2337	DECAL	-	1

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GRABBER HALOGEN WORK LIGHT

372-1457-002



NOTES:
1. ITEM 1 NOT SHOWN, INSTALL TO SUIT.
2. MOUNT LIGHT ON SERVICE PROP BRACKET, OR ON BATTERY BOX IF BATTERY BOX COVERS BRACKET.
3. MOUNT LIGHT SO THAT IT ILLUMINATES AREA DIRECTLY IN FRON TO GRABBERS.

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GRABBER HALOGEN WORK LIGHT

372-1457-002

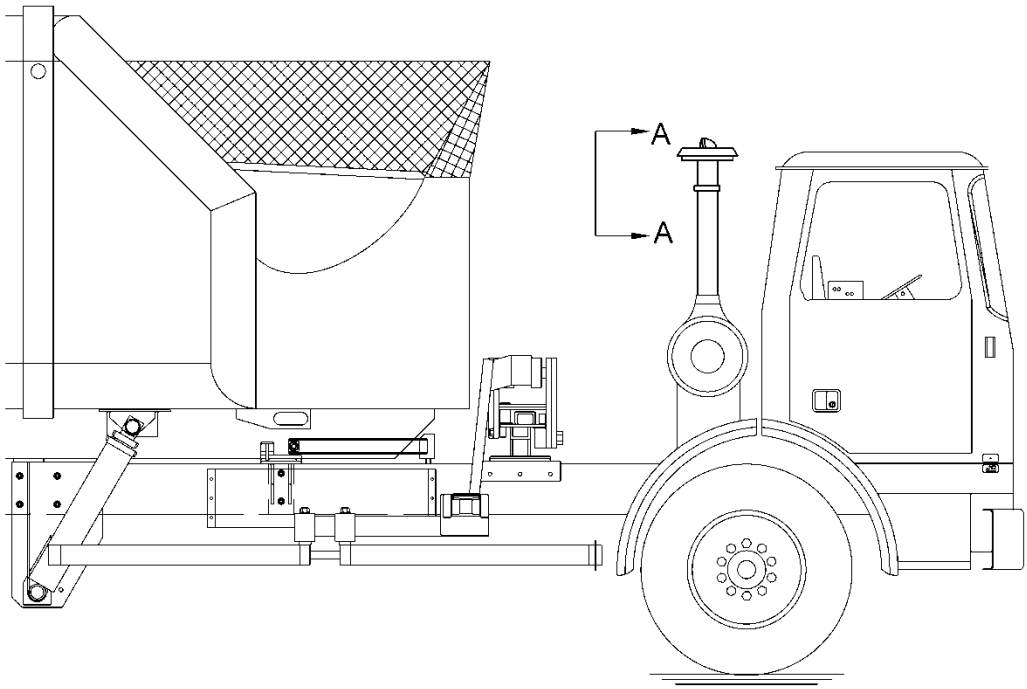
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-1457-002	LIGHT, Work, Halogen, Grabber	-	REF
-1	036-1640-208	TIE, Wire, 7-1/25", #50	-	10
2	108-7760	SWITCH, Rocker Type, SPST	-	1
3	263-1513	HARNESS, Work Light, Grabber	-	1
4	311-2817	BRACKET, Work Light, Grabber, 12 Ga.	-	1
5	372-1380	LIGHT, Flood, Halogen	-	1

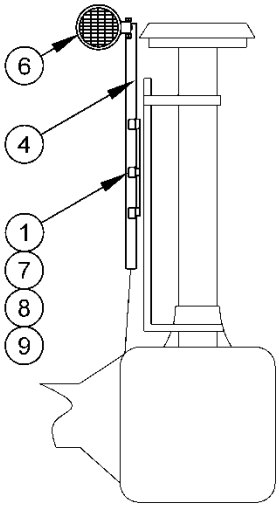
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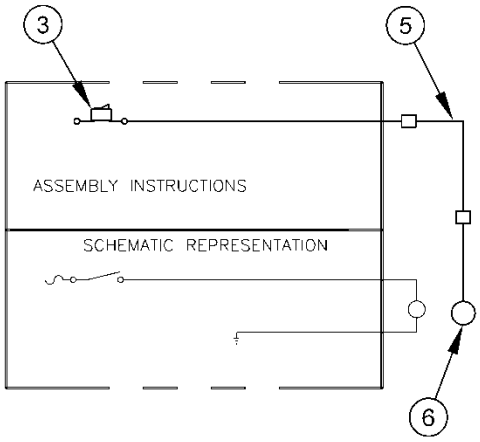
HOPPER HALOGEN WORK LIGHT KIT

372-1457-003





VIEW A A



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HOPPER HALOGEN WORK LIGHT KIT

372-1457-003

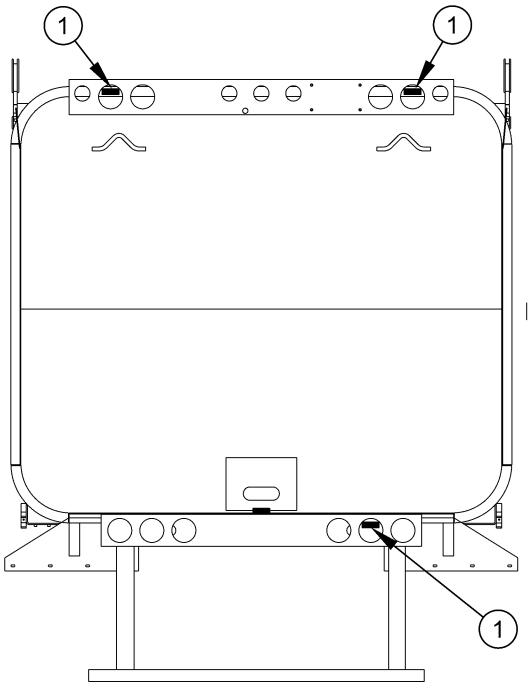
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-1457-003	KIT, Work Light, Halogen, Hopper	-	REF
1	036-1249	CLAMP, Wire Loom	-	6
-2	036-1640-208	TIE, Wire, 7-1/25”, #50	-	10
3	108-7760	SWITCH, Rocker Type, SPST	-	1
4	211-9082	BRACKET, Mtg., Work Light, 1/4" x 2” x 2” HR Angle	-	1
5	236-1514	HARNESS	-	1
6	372-1380	LIGHT, Flood, Halogen	-	1
7	FSP070715	HHCS, 1/4”-20 x 3/4”, Gr. 5, Plated	-	3
8	FSP550300	WASHER, Lock, 1/4", Plain	-	3
9	FSP320700	NUT, Lock, 1/4”, Gr. 8, Plated	-	3

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VINYL TRIM PASS THROUGH HARNESS

372-1466



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VINYL TRIM PASS THROUGH HARNESS

372-1466

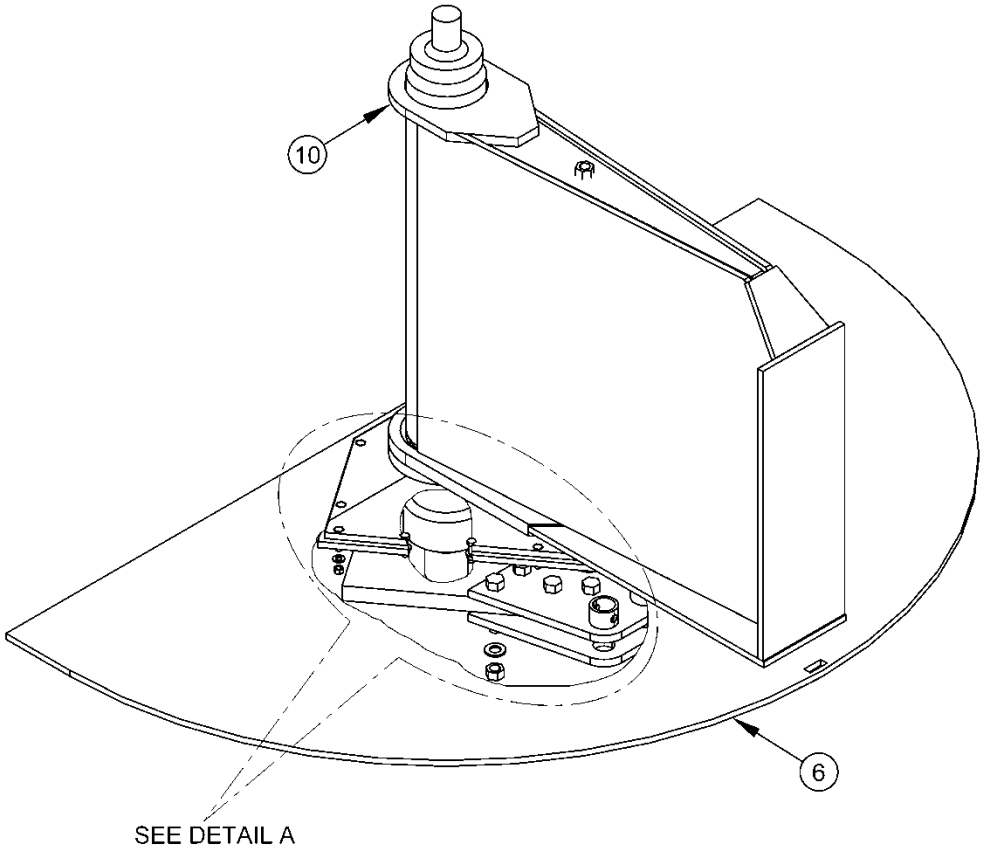
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-1466	HARNESS, Vinyl Trim, Pass Through	-	REF
1	022-3925	TRIM, Vinyl	-	10’

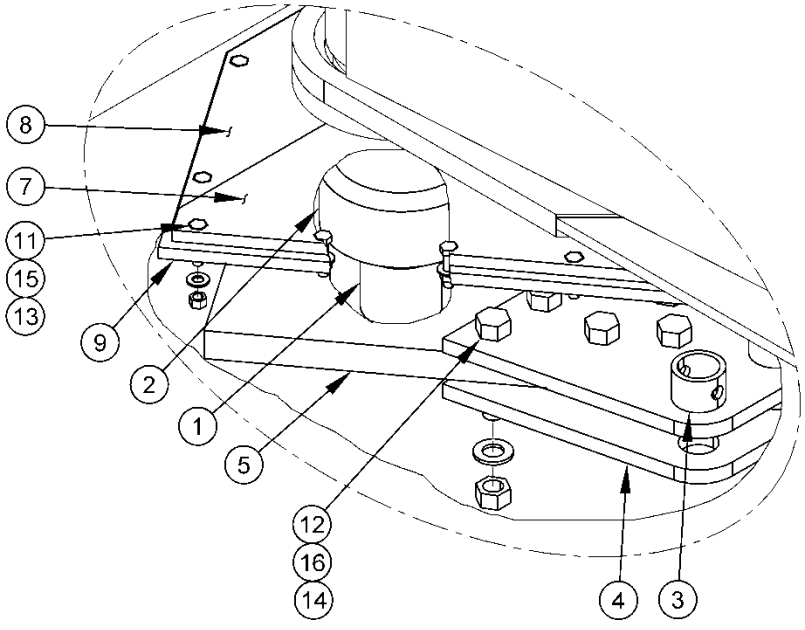
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PERPETUAL PACKER MOUNTING KIT

372-1575





DETAIL A

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PERPETUAL PACKER MOUNTING KIT

372-1575

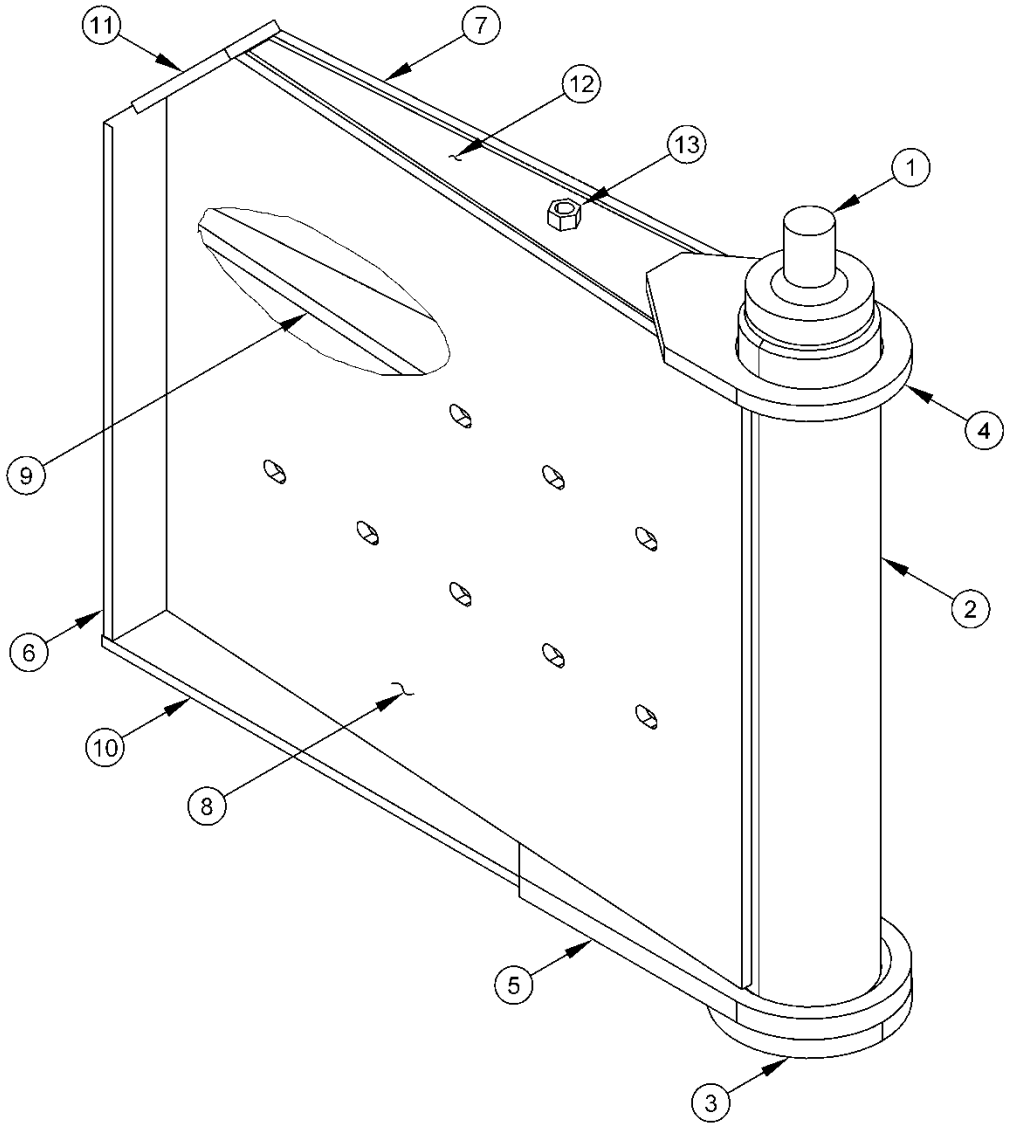
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-1575	KIT, Mounting, Perpetual Packer	-	REF
1	003-5106	BUSHING, Wedge, tandem Lock	-	1
2	008-9349	SHAFT, Lower Paddle, Tapered	-	1
3	040-2512	COLLAR, Lock	-	2
4	234-1989	PLATE, Actuator Nose	-	2
5	234-2007	PLATE, Actuator	-	1
6	234-2115	FLOOR, Hopper, Perpetual Packer	-	1
7	234-2116	COVER, Hopper, Perpetual Packer	-	1
8	234-2130	COVER, Hopper, Lower	-	1
9	237-8803	FRAME, Cutout, Actuator	-	1
10	372-1180	KIT, Packer Paddle, Perpetual (See Pg. 7291)	-	1
11	FS080924	HHCS, 3/8” x 1-1/2”, Gr. 8	-	14
12	FS081546	HHCS, 3/4"-10 x 3-3/4”, Gr. 8	-	7
13	FS230900	NUT, Lock, 3/8”-16, Gr. 5	-	14
14	FS321500	NUT, Lock, 3/4"-10, Gr. 8	-	7
15	FS520900	WASHER, Flat, 3/8” SAE, Plain	-	14
16	FS521500	WASHER, Flat, 3/4” SAE, Plain	-	7
-17	-	NA	-	REF
-18	-	NA	-	REF
-19	-	NA	-	REF

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PERPETUAL PACKER PADDLE ASSEMBLY

372-1180



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PERPETUAL PACKER PADDLE ASSEMBLY

372-1180

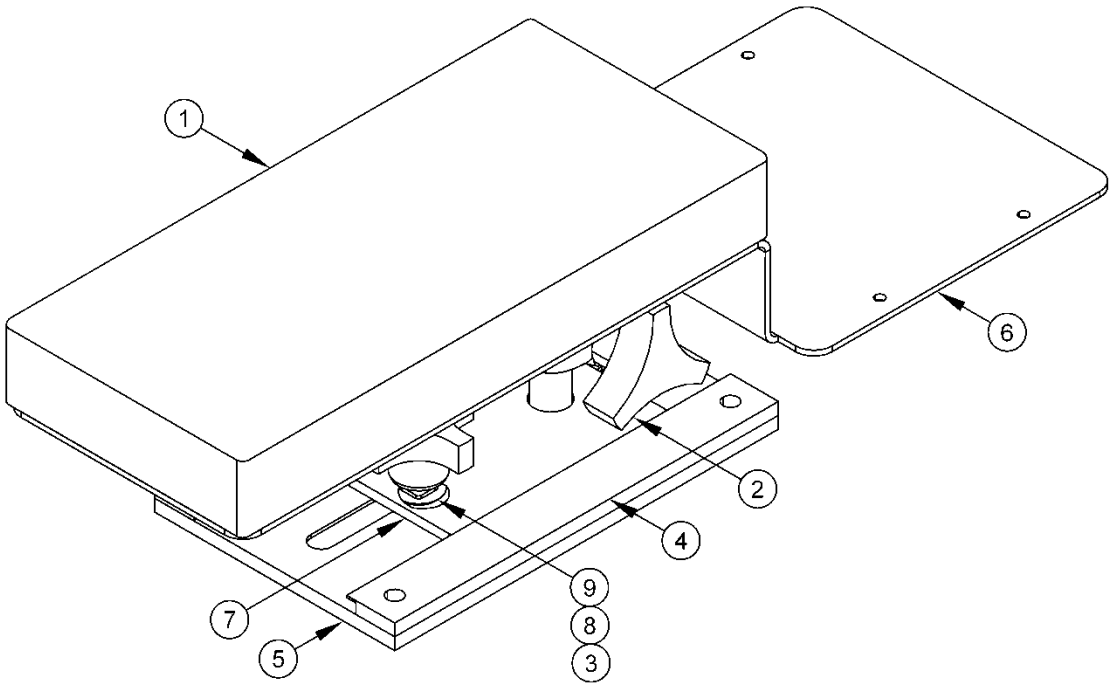
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-1180	KIT, Packer Paddle, Perpetual	-	REF
1	008-9031	SHAFT, Paddle, Upper	-	1
2	008-9032	SHAFT, Paddle, Middle	-	1
3	026-4928	RING, Packer, Paddle	-	1
4	040-2503	COLLAR, Top	-	1
5	040-2504	COLLAR, Bottom, Packer	-	1
6	134-9644-048	PLATE, Flat	-	1
7	234-0452	PLATE, Side, Packer	-	1
8	234-0453	PLATE, Face, Packer Paddle	-	1
9	234-0454	WEB, Paddle, Packer	-	2
10	234-0455	PLATE, Bottom, Packer	-	1
11	234-0456	PLATE, Corner, Paddle	-	1
12	234-0457	WEB, Paddle, Packer	-	1
13	FS231500	NUT, Lock, 3/4"-10, Gr. 5	-	1

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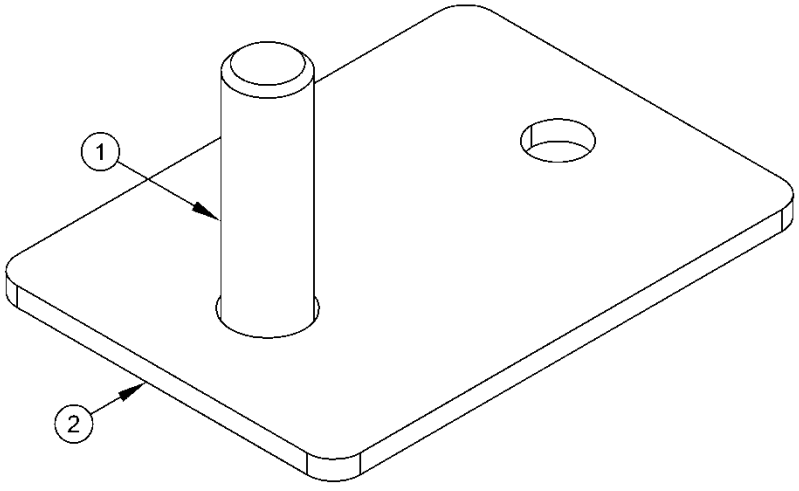
PANAVISE LOW PROFILE ARM REST KIT

372-1667



ARM REST LOW PROFILE BASE ASSEMBLY

311-3528



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PANAVISE LOW PROFILE ARM REST KIT
372-1667

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-1667	KIT, Arm Rest, Low Profile, Panavise	-	REF
1	014-1859-001	PAD, Arm Rest	-	1
2	036-1885	PANAVISE	-	1
3	070-1811	KNOB, 3/8”-16, Thd.	-	1
4	234-1967	PLATE, Guide, Panavise	-	2
5	311-1815	PLATE, Mtg., Arm Rest	-	1
6	311-1816-001	PLATE, Pad Mtg., Armrest, 12 Ga.	-	1
7	311-3528	ASSEMBLY, Base, Low Profile Armrest (See Pg. 7293)	-	1
8	FS520900	WASHER, Flat, 3/8” SAE, Plain	-	1
9	FSP020920	BOLT, Carriage, 3/8” x 1”	-	1

ARM REST LOW PROFILE BASE ASSEMBLY
311-3528

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	311-3528	ASSEMBLY, Base, Low Profile, Arm Rest	-	REF
1	048-7239	PIN, Pivot	-	1
2	234-2562	PLATE, Armrest, Low Profile	-	1

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CONDOR SS AND CS MOUNT JOYSTICK INSTALLATION KIT

372-1755-001, 372-1755-002

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-1755-001	KIT, Installation, Joystick, SS Mount, Condor	A	REF
-	372-1755-002	KIT, Installation, Joystick, CS Mount, Condor	B	REF
-1	372-1671-001	KIT, Pod/Mounting, Joystick, SS Mount, Condor (See Pg. 7295)	A	1
-1a	372-1671-002	KIT, Joystick, Pod/Mounting, CS Mount, Condor (See Pg. 7295)	B	1
-2	047-2151-001	SCREW, Tek, #12-14 x 3/4”	-	7
-3	311-2279	BRACKET, Joystick, Condor	A	1
-3a	311-2710	BRACKEt, Joystick, Condor	B	1
-4	FS070720	HHCS, 1/4”-20 x 1’’, Gr. 5	-	6
-5	FS230700	NUT, Lock, 1/4”-20, Gr. 5	-	6
-6	FS530700	WASHER, Flat, 1/4" SAE	-	6

CONDOR SS AND CS MOUNT JOYSTICK POD/MOUNTING KIT

372-1671-001, 372-1671-002

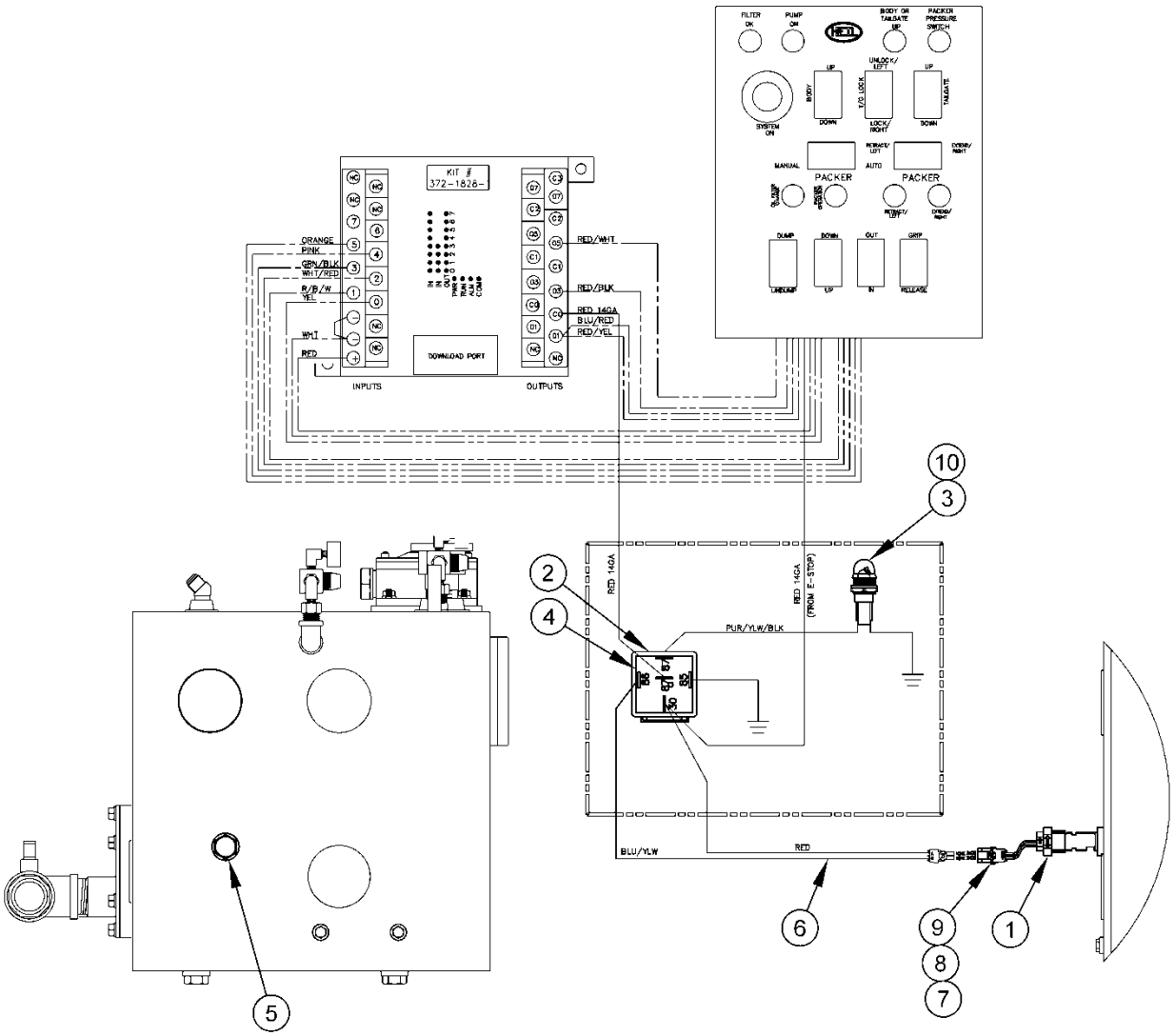
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-1671-001	KIT, Pod/Mounting, Joystick, SS Mount, Condor	A	REF
-	372-1671-002	KIT, Joystick, Pod/Mounting, CS Mount, Condor	B	REF
-1	014-2075-001	ARMREST, Joystick, SS Mount	A	A/R
-1a	014-2075-002	ARMREST, Joystick, CS Mount	B	A/R
-2	113-3689-001	POD, Joystick, SS Mount	A	A/R
-2a	113-3689-002	POD, Joystick, CS Mount	B	A/R
-3	701-8448	BRACKET, Installation, Joystick	-	A/R
-4	701-8449	ARMREST, Installation, Joystick	-	A/R
-5	701-8450	INSTALLATION, Joystick	-	A/R

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LOW OIL WARNING/SHUTDOWN KIT

372-2096



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LOW OIL WARNING/SHUTDOWN KIT

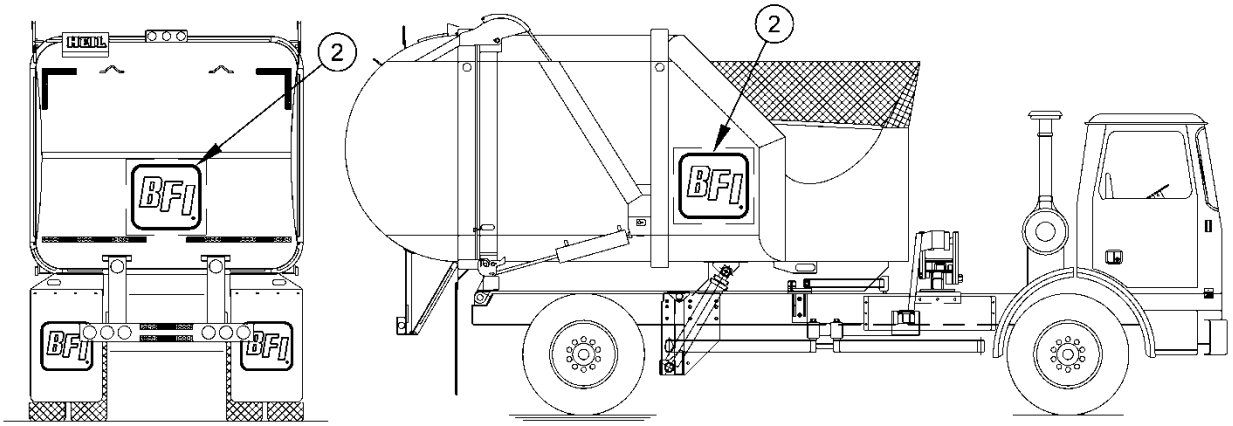
372-2096

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-2096	KIT, Warning/Shutdown, Low Oil	-	REF
1	063-0117	SENSOR, Liquid Level (Reed Float Switch)	-	1
2	108-6410	RELAY, Suppressed	-	1
3	115-0766	LIGHT, Caution, Red (See SM 7)	-	1
4	108-2050	DISCONNECT, Quick, Terminal, w/Heat Shrink, Female	-	4
5	074-1826-006	FLANGES, Tank, 45°, 1”-2-1/8”	-	1
6	263-1162	HARNESS, Warning	-	1
7	108-4827-003	CONNECTOR, Male, 2 Way, Packard	-	1
8	108-4827-110	PIN, Pack, Weather	-	2
9	108-4827-131	SEAL, Cable, 18 AWG	-	1
10	212-1880	DECAL, Low Hydraulic Fluid	-	1

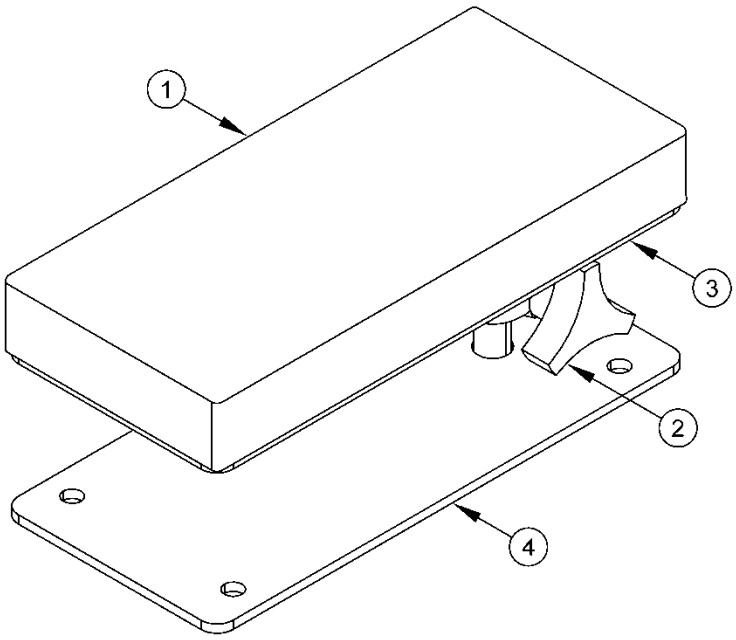
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BFI LOGO KIT
372-2217



LOW PROFILE NON SLIDE PANAVISE ARM REST
372-2908



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BFI LOGO KIT

372-2217

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-2217	KIT, Logo, BFI	-	REF
-1	212-2177	KIT, Stripe, BFI	-	1
2		LOGO, BFI, 23” x 24”	-	3

LOW PROFILE NON SLIDE PANAVISE ARM REST

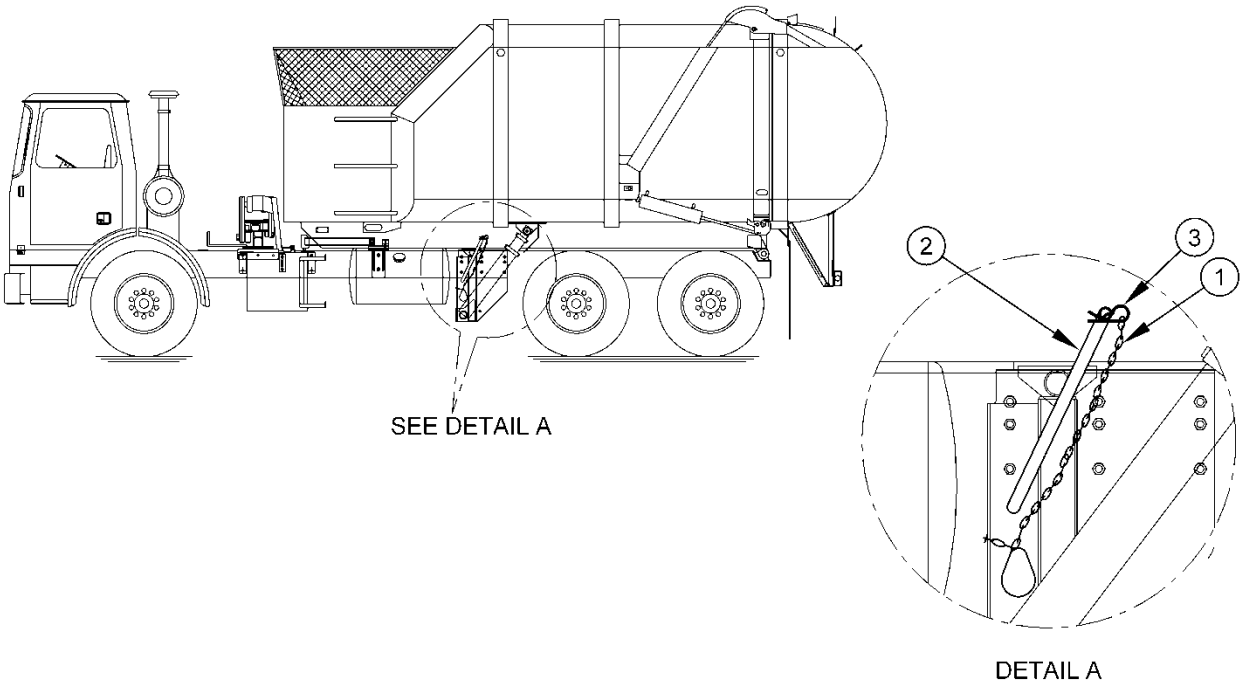
372-2908

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-2908	REST, Arm, Low Profile, Non Slide, Panavise	-	REF
1	014-1859-001	PAD, Arm Rest	-	1
2	036-1885	PANAVISE	-	1
3	311-1816-002	PLATE, Mtg., Pad	-	1
4	311-3460	BRACKET, Plate, Base, Armrest	-	1

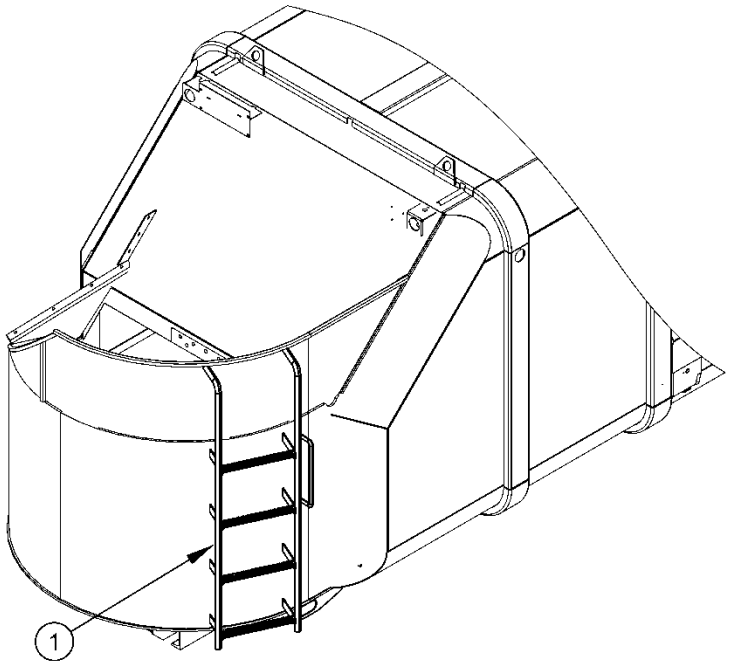
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CONE HOLDER KIT
372-2917



HOPPER LADDER RAILS KIT
372-3122, 372-3122-001



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CONE HOLDER KIT

372-2917

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-2917	KIT, Cone Holder	-	REF
1	043-0910-042	CHAIN, Twisted Link, 42”	-	1
2	220-0408	TUBE, 3/4" x 40” x 28”	-	1
3	FS340735	PIN, Cotter, 0.178” x 3-3/4”	-	1

HOPPER LADDER RAILS KIT

372-3122, 372-3122-001

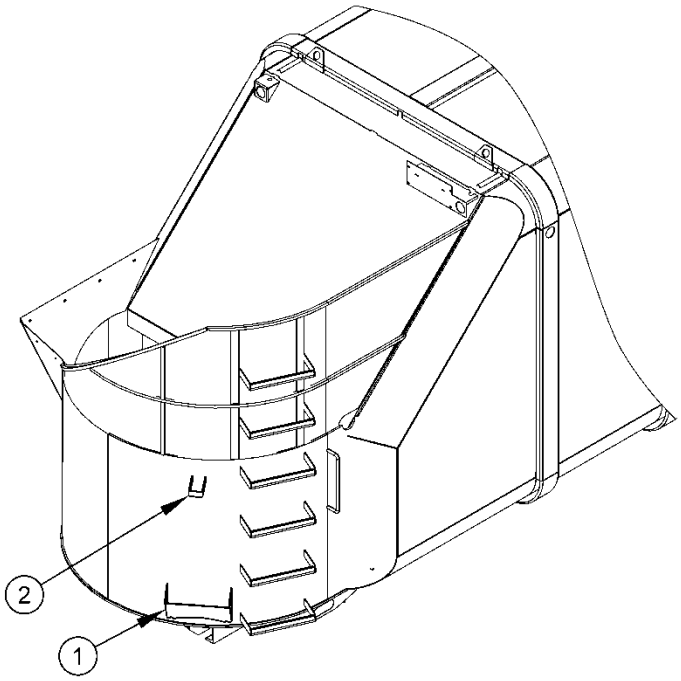
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-3122	KIT, Ladder Rail, Hopper	A	REF
-	372-3122-001	KIT, Ladder Rail, Extended, Hopper	B	REF
1	121-2520	RAIL, Ladder, Hopper	A	2
-1a	121-2520-001	RAIL, Ladder, Hopper	B	2

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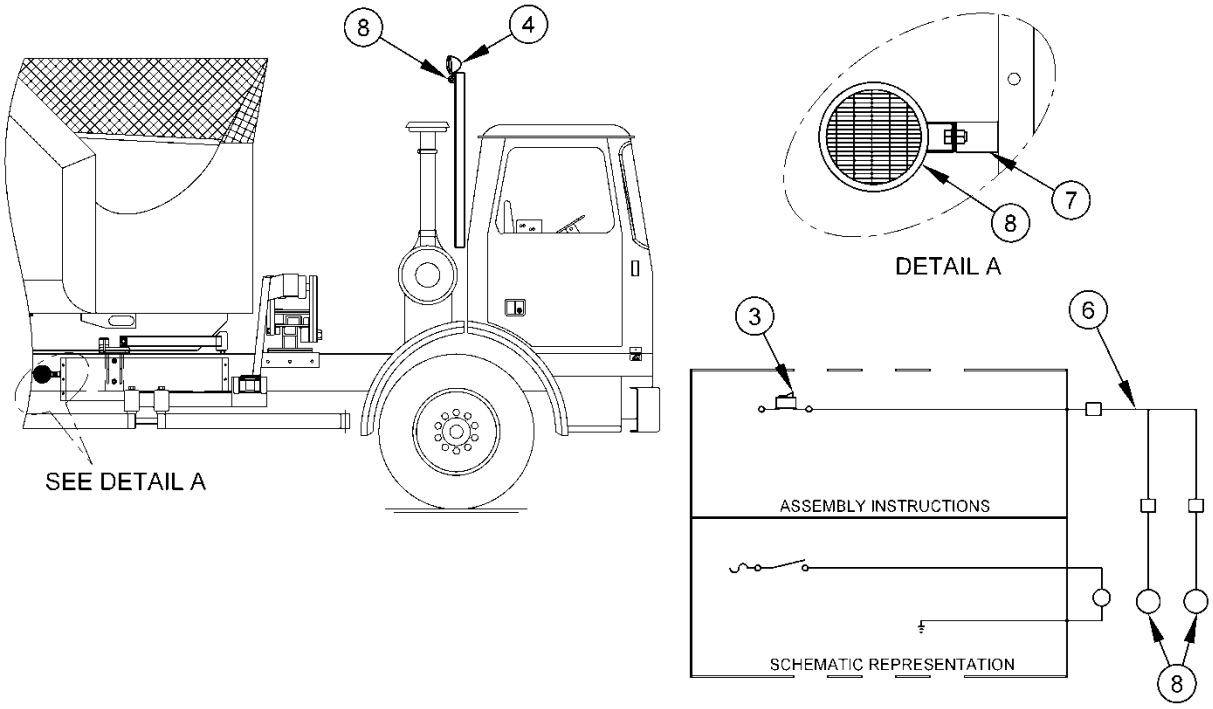
SHOVEL AND RAKE HOLDER KIT

372-3171



HOPPER/GRABBER HALOGEN WORK LIGHT

560-0012-001



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SHOVEL AND RAKE HOLDER KIT

372-3171

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	372-3171	KIT, Holder, Shovel and Rake	-	REF
1	311-2272-001	BRACKET, Holster, Shovel	-	1
2	311-2601	BRACKET, Holder, Handle	-	1

HOPPER/GRABBER HALOGEN WORK LIGHT

560-0012-001

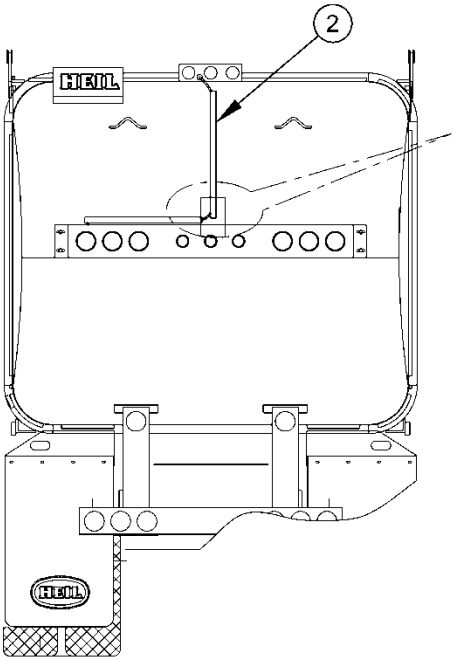
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	560-0012-001	LIGHT, Work, Halogen, Hopper/Grabber	-	REF
-1	036-1249	CLAMP, Wire Loom	-	6
-2	036-1640-208	TIE, Wire, 7-1/25”, #50	-	10
3	108-7760	SWITCH, Rocker Type, SPST	-	1
4	211-9082	BRACKET, Mtg., Work Light, 1/4" x 2” x 2” HR Angle	-	1
-5	212-1580-008	DECAL, Flood Light, Hopper	-	1
6	263-1515	HARNESS, Work Light, Grabber/Hopper (See SM 10)	-	1
7	311-2817	BRACKET, Work Light, Grabber, 12 Ga.	-	1
8	372-1380	LIGHT, Flood, Halogen	-	2

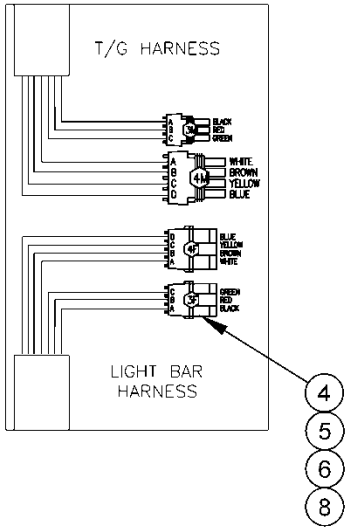
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LIGHT BAR INSTALLATION

701-7391





DETAIL A

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LIGHT BAR INSTALLATION

701-7391

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	701-7391	INSTALLATION, Light Bar	-	REF
-1	108-5681	HARNESS, w/Attachment, Tailgate	-	1
2	RM-51-002	ANGLE, Structural, 3/4" x 1/8”	-	10’
-3	-	NA	-	REF
4	108-4827-004	CONNECTOR, Female, 2 Way, Packard	-	1
5	108-4827-006	CONNECTOR, Female, 3 Way, Packard	-	1
6	108-4827-121	TERMINAL, Female, 16-14 AWG, Packard	-	7
8	108-4827-132	SEAL, Cable, 16-14 AWG	-	7

Note: Item 7 is not available.

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NUMERICAL INDEX

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001-6164-009	5011	001-6407-001	5013	003-4438	2013
001-6165-001	5007	001-6407-002	5013	003-4448	7273
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ISSUED NOVEMBER 2011

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Rapid Rail® Co-Collector



SERVICE MANUAL

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TP1RRC-10001-SM-1111

Customer Support

Heil Environmental ▪ 4301 Gault Ave. North . Fort Payne, AL 35967-9984· 866.275.4345



WARNING

IF INCORRECTLY USED, THIS EQUIPMENT CAN CAUSE SEVERE INJURY, THOSE WHO USE AND MAINTAIN THE EQUIPMENT SHOULD BE TRAINED IN ITS PROPER USE, WARNED OF ITS DANGERS, AND SHOULD READ AND FULLY UNDERSTAND THE ENTIRE MANUAL BEFORE ATTEMPTING TO SET UP, OPERATE, ADJUST OR SERVICE THE EQUIPMENT. KEEP THIS MANUAL FOR FUTURE REFERENCE.

IMPORTANT SAFETY NOTICE

Proper service and repair are important to the safe, reliable operation of Heil Environmental's products. Service procedures recommended by Heil are described in this service manual and are effective for performing service operations. Some of these service operations may require the use of tools or blocking devices specially designed for the purpose. Special tools should be used when and as recommended. It is important to note that some warnings against the use of specific methods that can damage the product or render it unsafe are stated in the service manual. It is also important to understand these warnings are not exhaustive. Heil could not possibly know, evaluate and advise the service trade of all conceivable ways in which service might be done or of the possible hazardous consequences of each way. Consequently, Heil has not undertaken any such broad evaluations. Accordingly, anyone who uses service procedures or tools which are not recommended by Heil must first satisfy himself thoroughly that neither his safety nor the product safety will be jeopardized by the methods he selects.

Rapid Rail Co-Collector ™
SERVICE MANUAL

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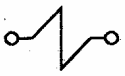
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SYMBOL DEFINITIONS


BATTERY


FUSE


SOLENOID



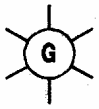
CONTACT RELAY



NORMALLY OPEN CONTACT OF CR1

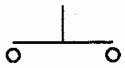


NORMALLY CLOSED CONTACT OF CR1



INDICATOR LIGHT (GREEN)

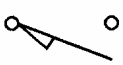

PUSH BUTTON SWITCH NORMALLY CLOSED

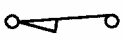

PUSH BUTTON SWITCH NORMALLY OPEN

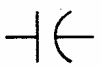

TOGGLE SWITCH


DIODE


PRESSURE SWITCH


LIMIT SWITCH NORMALLY OPEN


LIMIT SWITCH NORMALLY CLOSED

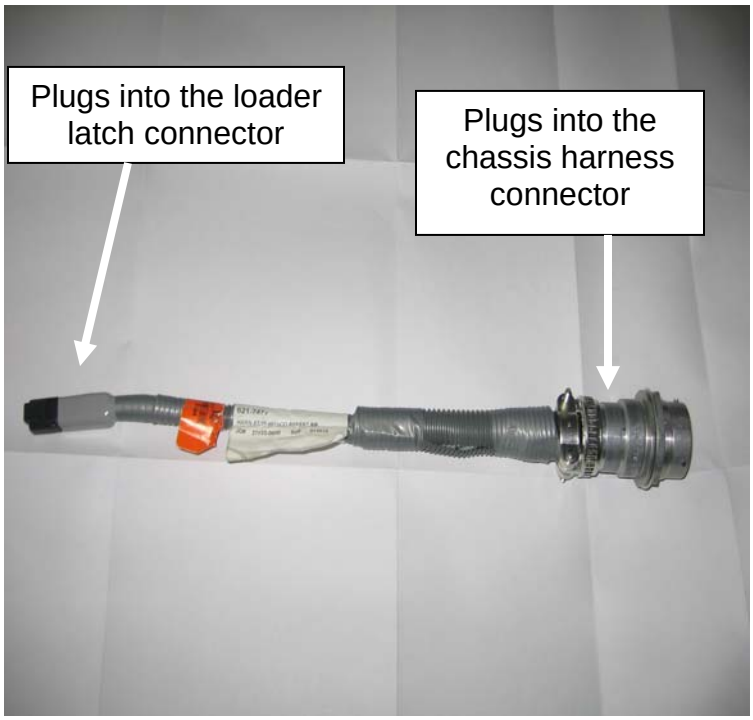

CAPACITOR

2008 BANG-BANG TEST HARNESS
V-2 Rapid Rail Lift Arm
263-1436-011

The Bang-Bang test harness should only be used for test purposes, to determine if there is a problem with the lift control valve interface boxes. Extended use of the Bang-Bang test harness may cause lift arm structural damage and may void the unit warranty.

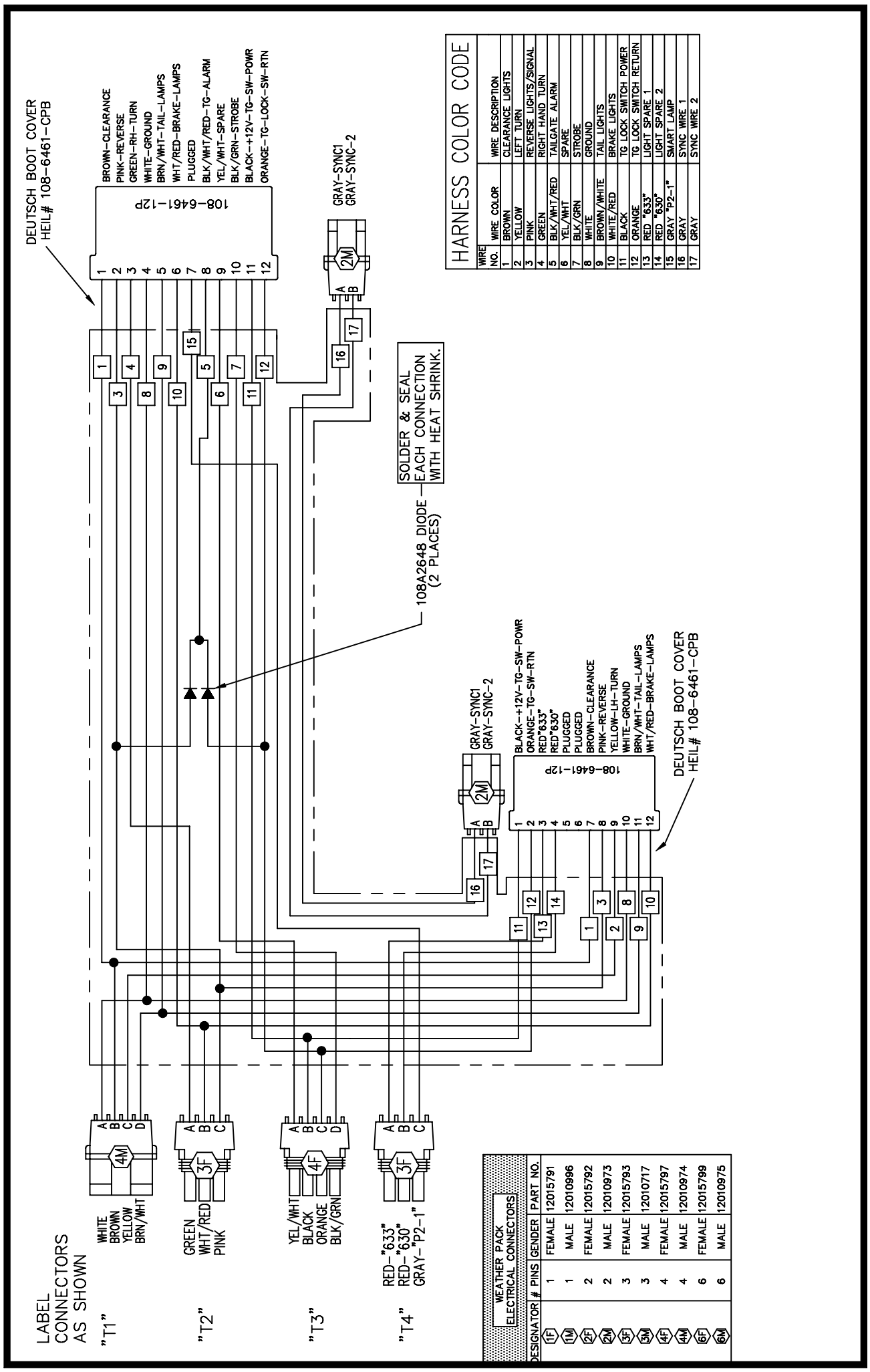
The 2008 lift control valve is designed to provide a “soft shift” feature when operating the lift controls. The soft shift feature provides a smooth transition of lift arm motion without compromising fast productive lift operation and protects the structural lift components from stress and metal fatigue for longer life.

Interface Boxes Diagnostic Procedure
If the lift arm malfunctions both electrical interface boxes can be diagnosed for problems by eliminating these boxes from the electrical circuit. Install the Bang-Bang test harness between the chassis harness and the loader latch harness connector eliminating both electrical interface boxes. Operate all lift functions and make a determination if the electrical interface boxes are causing the lift to malfunction. Replace the individual interface boxes as needed to solve the lift malfunctions.

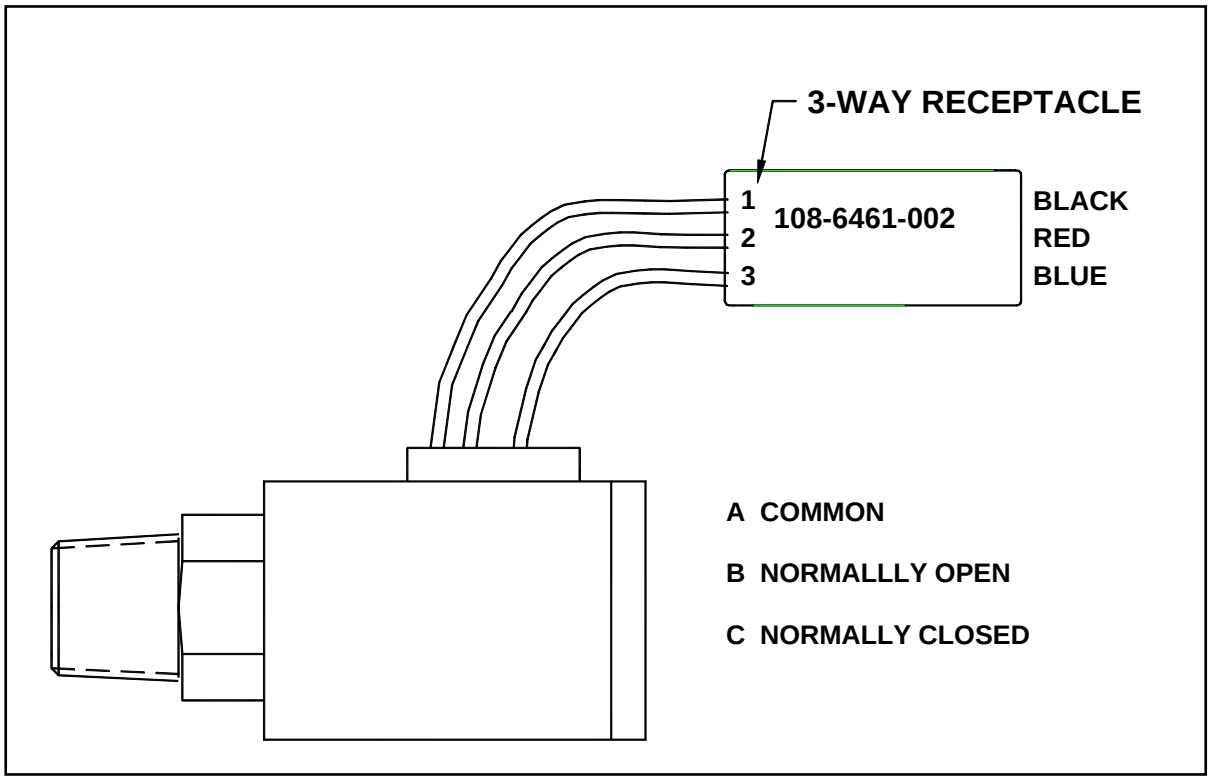


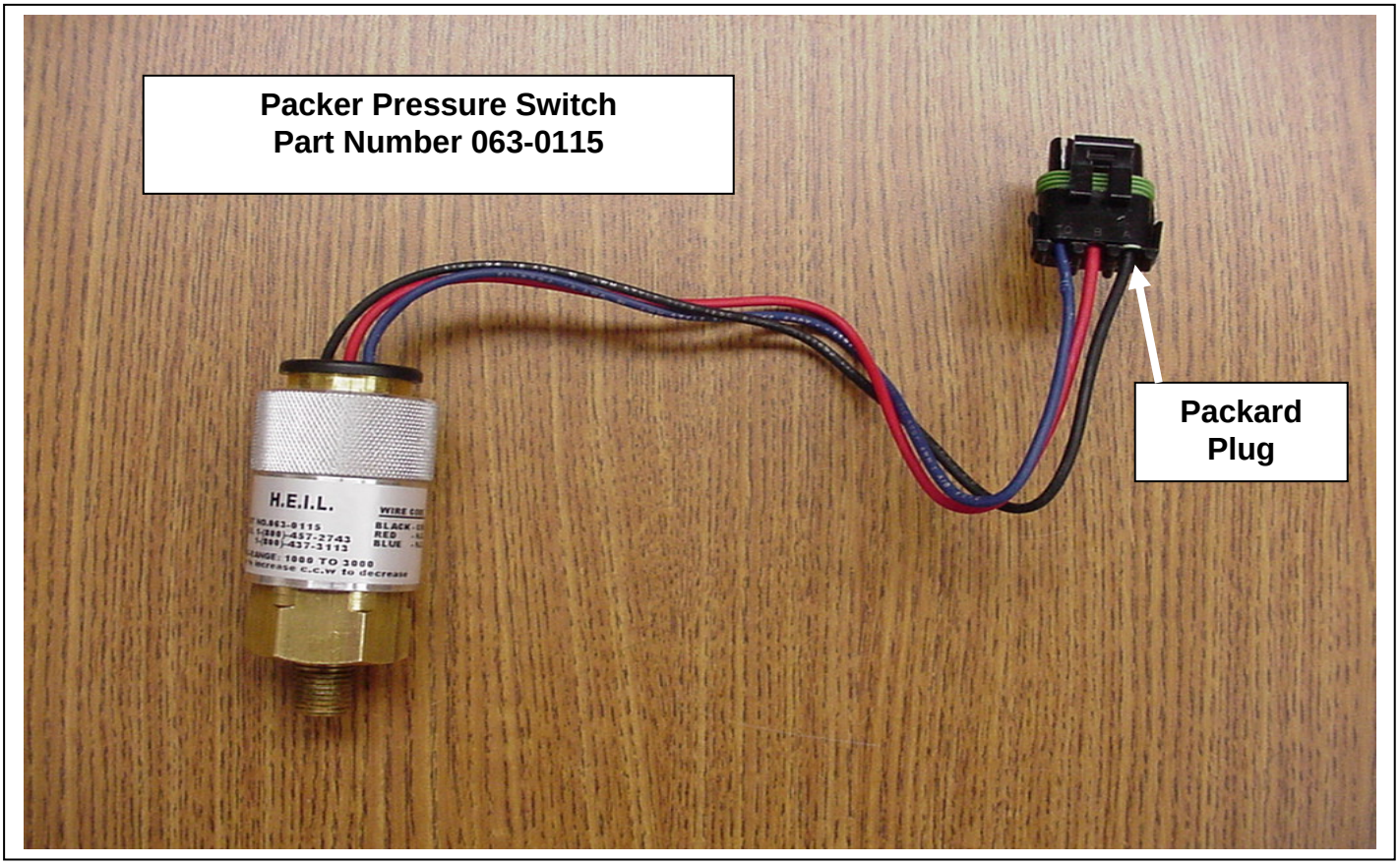


SPLITTER WIRE HARNESS - 263-1436-002



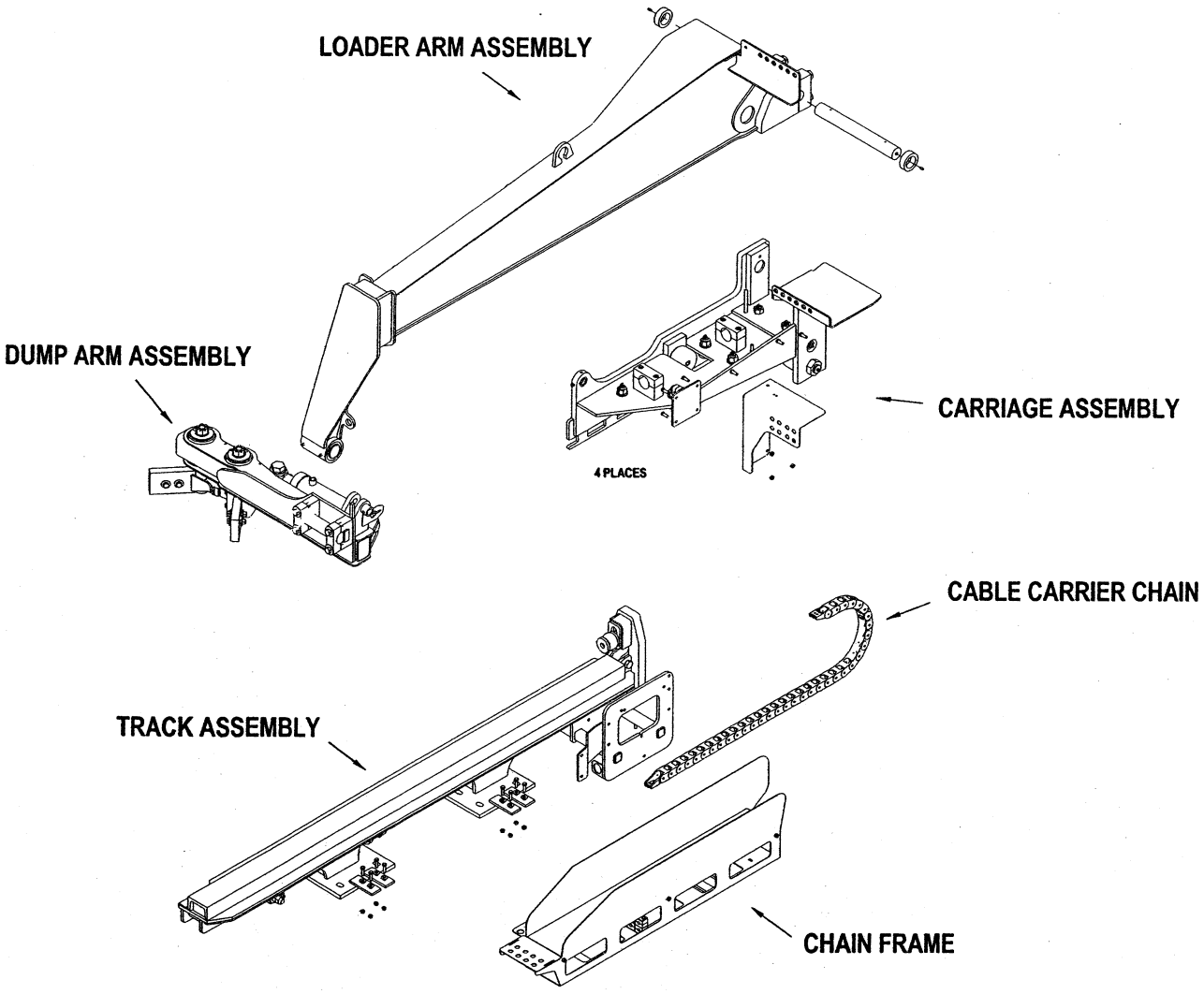
PACKER PRESSURE SWITCH





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LOADER NOMENCLATURE



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BODY/TAILGATE PROXIMITY SWITCHES

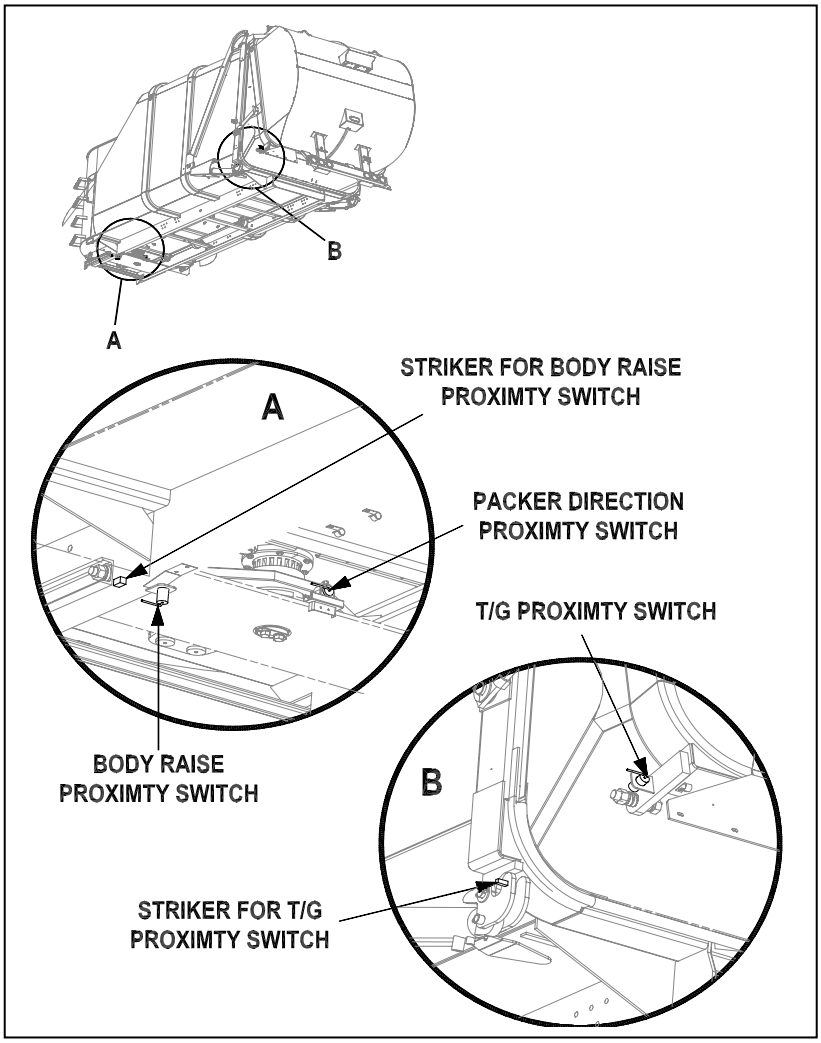
The **BODY-UP PROXIMITY SWITCH (N. O.)** is located on the left body prop bracket with the striker located on the body above the switch. This switch turns on an alarm when the body is raised off the chassis.

If the BODY-UP PROXIMITY SWITCH does not activate the alarm, DO NOT OPERATE THE TRUCK. FURTHER TROUBLESHOOTING IS REQUIRED.

The **TAILGATE UNLATCH PROXIMITY SWITCH (N.O.)** is mounted on the tailgate with the striker mounted on the tailgate hinge. It is activated by breaking contact with the striker. When the tailgate latch is released, this switch interrupts an electrical circuit causing an alarm to sound, warning the operator that the tailgate is not fully closed and latched.

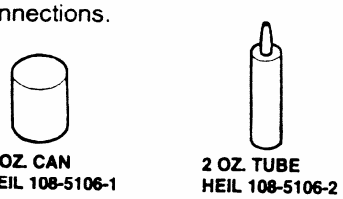
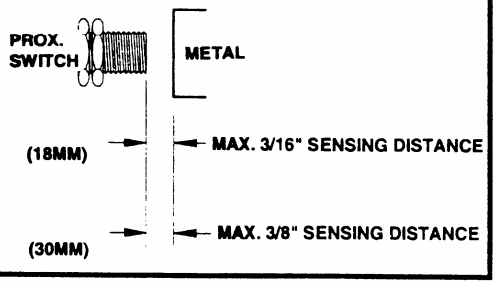
IF THE TAILGATE UNLATCH PROXIMITY SWITCH does not activate the alarm, **DO NOT OPERATE THE TRUCK. FURTHER TROUBLESHOOTING IS REQUIRED.**

The **PACKER REVERSING PROXIMITY SWITCH (N. O.)** is non adjustable and located under the body, behind the packer actuator plate. This switch is used to signal when to reverse the direction of the packer paddle in the automatic packing condition. It should adjusted to reverse motion of the packer paddle occurs before the left or right hand packer cylinder completely bottoms out. If switch does not work, the body full alarm will sound.



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PROXIMITY SWITCH TROUBLESHOOTING

PROBLEM	PROBABLE CAUSE	REMEDY
Switch Failure	1. Loose or corroded electrical connections.	1. Use dielectric grease and cover all exposed metal conductors in the connections.  8 OZ. CAN HEIL 108-5106-1 2 OZ. TUBE HEIL 108-5106-2 The following brand names are approved: A. Truck-Lite NYK-77 compound B. GB ox-gard, antioxidant C. Burndy penetrox A electrical joint compound. 2. Make sure all connections are tight.
	2. Damaged Switch: A. Cracked ferrite core causing the fine internal wire to break. B. Cracked ferrite core - but wire not broken - the sensitivity of switch will increase which causes sensing distance to increase or switch may work intermittently as the temperature changes.	3. Do not strike switch thinking that will make it work. 4. When adjusting switch, take care not to damage switch. 5. Do not adjust switch too close to the metal it is sensing.
	3. Voltage spikes from truck chassis electrical system will breakdown the internal electronics of the proximity switch.	6. A clean power source from the chassis manufacturer. 7. The body electrical system is protected from voltage spikes **NOTE:** Heil prox. switches have a Light Emmitting Diode (LED) on the switch to indicate when switch is sensing metal. Most likely, the switch is working when the light is "on". In order for the switch to work - it must be close enough to metal it is sensing for the light to come "on".
	4. Improper Sensing Range	8. Adjust prox. switches to sense metal as follows: 

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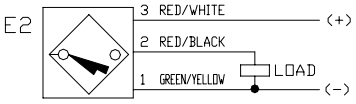
PROXIMITY SWITCH TROUBLESHOOTING

PROBLEM	PROBABLE CAUSE	REMEDY
Switch Failure	5. If proximity switch LED light is **not** "ON".	9. Unplug proximity switch*. 10. Check the signal wire (terminal A) by grounding it to the body. The PLC light (in cab) will come "on" if the signal is okay. 11. Check the ground wire by jumping it and the signal (A and B). 12. Check the Hot wire (terminal C) with a test light. 13. If all three (3) wires are good, replace the proximity switch. *If the PLC light stays "on" when a switch is unplugged, the signal wire has been shorted to ground.

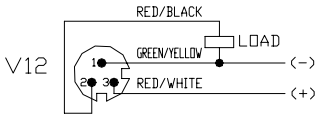
WIRING DIAGRAM

3-WIRE DC, PNP (SOURCING)

Normally open

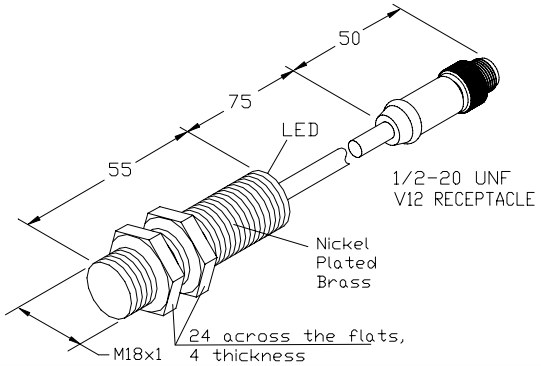


Male Receptacle End View



DIMENSIONS

All dimensions in mm
Drawing not to scale.

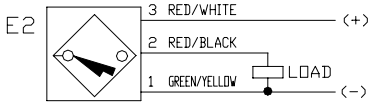


063-0108 (18mm)
NORMALLY OPEN SOURCING TYPE

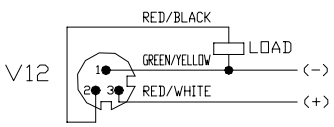
WIRING DIAGRAM

3-WIRE DC, PNP (SOURCING)

Normally open

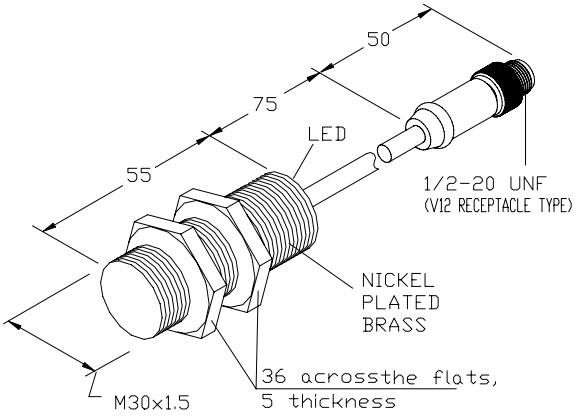


Male Receptacle End View



DIMENSIONS

All dimensions in mm
Drawing not to scale.



063-0109 (30mm)
NORMALLY OPEN SOURCING TYPE

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PLC (ELECTRONIC CONTROLS) LUBRICANTS and WELDING PROCEDURES

Before welding on any unit that has electronic devices like PLC'S, proximity switches and electronic control units (ECU'S), the following procedures must be followed;

1. Disconnect all battery connections.

2. Place welding ground as close as possible to the area that is being repaired.

3. Disconnect all PLC's and ECU's.

4. If welding within 24 inches of a proximity switch, remove the switch from the unit.

IMPORTANT: Failure to follow these procedures may cause damage to these devices. The damage comes from the inability of such devices to withstand the amperage, open circuit voltage and magnetic flux a welder can produce.

ELECTRICAL ANTI-CORROSION LUBRICANT

It is very important that all packard connectors are properly lubricated. The following compounds, by brand name, or functional equivalents, are approved for use.

1. Truck-Lite Corrosion Preventive Compound.

2. GB ox-gard, anti-oxidant compound.

3. Burndy Penetrox A electrical joint compound.

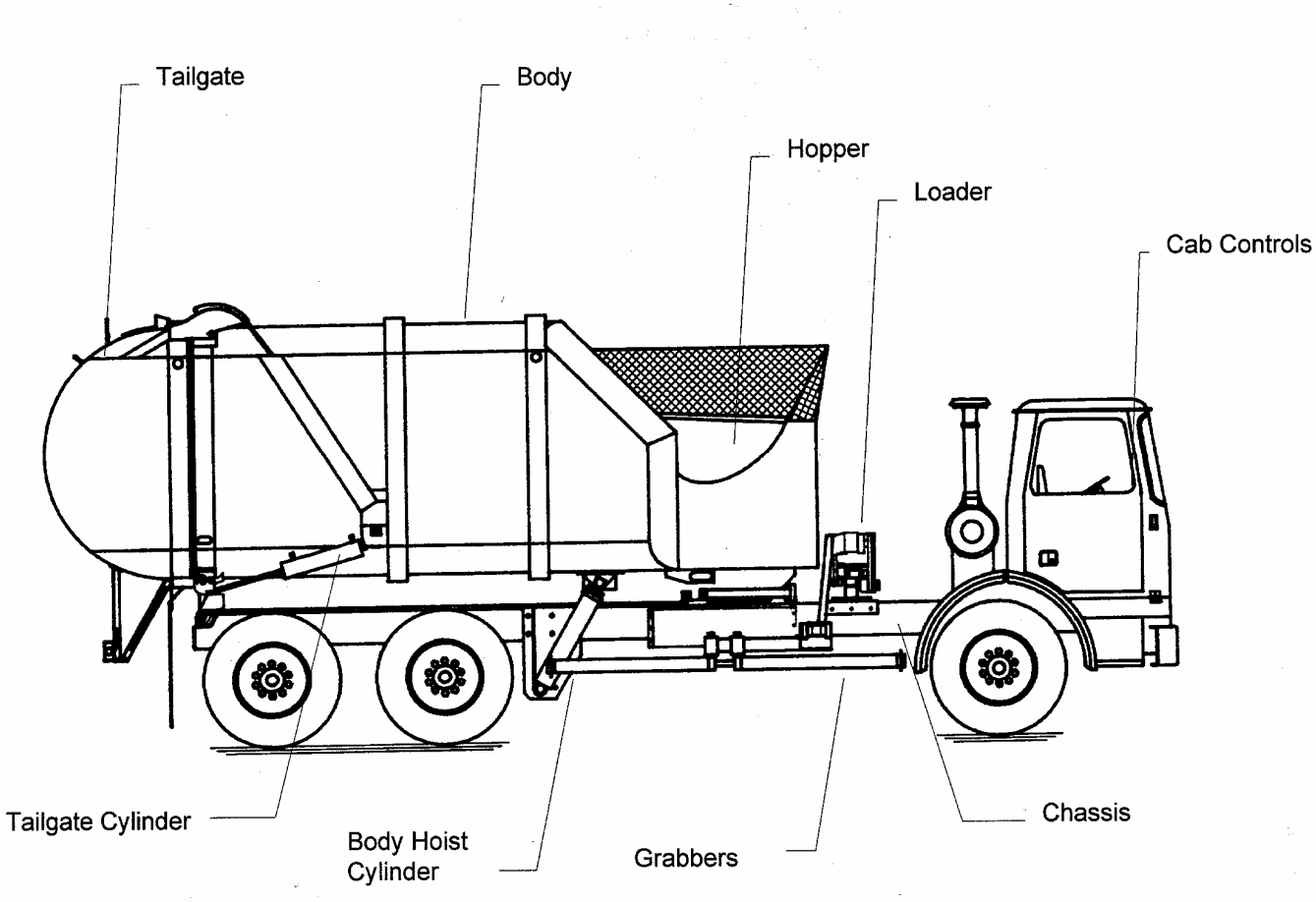
These lubricants may be obtained at an electrical supply store.

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NOMENCLATURE



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SPECIFICATIONS

Hydraulic Oil Tank	40 gal.
Hydraulic In-Tank Oil Filter	3-Micron
Hydraulic Oil Tank Suction Strainer	100 Mesh Screen
Cylinders;	
Body Hoist	2 stage x 55.38” Stroke
Packer	5” Bore x 43” Stroke
Tailgate Raise	3” Bore x 18.5” Stroke
In-Out	1.75” Bore x 72” Stroke
Grabber	2.5” Bore x 8” Stroke
Lift Arm	3” Bore x 16” Stroke
Dump	3” Bore x 8” Stroke
Hydraulic Pump	gear or vane type
Operate-in-gear - Remote mount	2 pumps @ 22 GPM @ 1200 RPM
Front mount	2 pumps @ 25 GPM @ 1200 RPM
Gear pump	Lift; 14 GPM @ 1500 RPM @ 2200 PSI
	.Packer; 27 GPM @ 1500 RPM @ 2400 PSI
EOS Setting	P1 - @900 RPM, P2 - @1800 RPM
Valve Pressure Settings;	
Loader Main System	2200 PSI
Loader In/Out Cross-port Relief	2350 PSI
Release	1100 PSI
Body Main Relief Valve	2400 PSI
Packer Pressure Switch	2200 PSI
Selector Valve Relief	1100 PSI
Packing Cycle Controls	Electric over Hydraulic
Cycle Times;	
Packer Cycle (Empty Hopper – @16 GPM - 180° Sweep)	13-16 seconds
Loader Cycle	7-9 seconds
Body Capacities (includes hopper)	16, 20, 22,, 24, 26, 30 & 32 cu yd

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MAINTENANCE INTERVALS

Preventative maintenance involves machine lubrication; normal maintenance intervals given in this manual are based on a 8-hour day and average operating conditions. Severe use or adverse conditions may require more frequent maintenance.

PREVENTATIVE MAINTENANCE CHART

Weekly - 40 Hours | Monthly - 200 Hours | Daily-8 Hours | Annually - 2000 Hours

Ref.	Component/System	Daily-8 Hours	Weekly - 40 Hours	Monthly - 200 Hours	Annually - 2000 Hours	Service/Check
1	Hydraulic System	X				Check oil level in tank & refill
			X			Check cylinders, pump & system for leaks; repair/replace if necessary
		See note below				*Replace filter (see * below chart)
						Replace tank breather
					X	Drain, flush & refill, change filter
				X		Check and adjust system pressures
2	Lights & Wiring	X				Check for proper operation
3	Operator's Control	X				Check for proper operation
4	Front Mount Pump Power Take Off (if so equipped)		X			Check seals for leaks & operation
5	Grease Fittings		X			Lubricate (See Figure 7.7)
6	Packing Mechanism	X				Lubricate (6) packer linkage pins, upper and lower bearings. (See Figure 7.10 & page 6.2 for lubricant)
7	Throttle Stop Device			X		Check & adjust if necessary
8	Automatic Lubrication System (where applicable)					See maintenance manual for lubricant type and preventative maintenance procedures.
9	Lift Mounting Bolts		X			Check torque if necessary.
10	Cycle Times			X		Check lift and packer cycle times. Adjust if necessary.
11	Body Hoist Saddle		X			Check torque
12	Direct Mount Pump			X		See note 2 below.

NOTE; Replace filter after first month of operation, then every three months (500 hours) there after or as required by in-cab filter monitor.
Replace the tank breather/filter every time the oil filter is changed.

NOTE 2: Every month (200 Hours), unbolt the pump 4-bolt flange, move away approx. 2 inches from the PTO and apply grease to the female pilot of the PTO pump flange. This acts as a barrier to prevent moisture from getting into the pump and PTO engagement area. If the pump shaft and PTO are not greased as recommended, damage to the pump shaft may occur.

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CRITICAL INFORMATION: It is critical that you routinely check the torque of the following roller bearings on the loader's carriage assembly. The life expectancy of each of these bearings is dependent upon tightening these bearings to the following torque requirements during installation of new bearings AND routinely maintaining these torque requirements. The bearings are the 2" and 4" cam followers (bearings). See the Parts Manual, page 2.20 for the locations of these bearings.

If the torque is less than specified, the life of the bearing is much shorter. If the torque is greater than specified, the bearings will freeze and fail very rapidly.

The 12 bearings are:

Item 2, Part Number 003-4449, 4" cam follower, quantity 2

and

Item 3, Part Number 003-4450, 2" cam follower, quantity 10.

Each Item 2 has a grease fitting, Item 12.

Each Item 3 has a grease fitting. Seven of the grease fittings are Item 14 (90° grease fittings) and three are Item 13 (straight grease fittings).

The **DRY** torque requirements for these bearings are:

Item 2, 4" cam follower, 500 ft-lbs (again, dry)
Item 3, 2" cam follower, 150 ft-lbs (again, dry).

Check the torque of these bearings every six (6) months or 1,000 hours.

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HOSE REPLACEMENT SCHEDULE – BODY and LOADER

LOADER			HOSE CHANGE INTERVAL				
Part Number	**Description**	**Qty.**	**3 mo.**	**6 mo.**	**9 mo.**	**1 year**	**Comments**
QC3-FFFF-027	Hose Ass'y, 1/2" Pressure, In-Out Cyl.	2				*	
QC3-FFFF-030	Hose Ass'y, 1/2" Pressure, Lift Raise	1	*			*	
QC3-FFFF-041	Hose Ass'y, 1/2" Pressure, Grip Cyl.	2	*				Due to twisting motion
QC3-FFFF-043	Hose Ass'y, 1/2" Pressure, Lift Lower	1					Due to twisting motion
QC3-FFFZ-011	Hose Ass'y, 1/2" Pressure, Dump	1				*	
QC3-FFFZ-017	Hose Ass'y, 1/2" Pressure, Undump	1				*	
QD1-FCFC-015	Hose Ass'y, 1/4" Pressure, Press. Switch	1				*	
QF5-FHFH-072	Hose Ass'y, 1/2" Pressure, Hose Tray	2		*			Due to bending motion

BODY			HOSE CHANGE INTERVAL			
Part Number	**Description**	**Qty.**	**3 mo.**	**6 mo.**	**9 mo.**	**1 year**
QC3-EFFF-060	Hose Ass'y, 1/2" Pressure, Tailgate	2				*
QC3-EFFF-036	Hose Ass'y, 1/2" Return, Packer (16 yard)	1				*
QC3-EFFF-072	Hose Ass'y, 1/2" Return, Packer (20-26 yard)	1				*
QC3-EFFF-086	Hose Ass'y, 1/2" Return, Packer (30-32 yard)	1				*
QC3-FFFF-023	Hose Ass'y, 1/2" Pressure, Tailgate/Packer	5				*
QF6-EKFK-036	Hose Ass'y, 1" Pressure, Packer (16 yard)	2				*
QF6-EKFK-072	Hose Ass'y, 1" Pressure, Packer (20-26 yard)	2				*
QF6-EKFK-086	Hose Ass'y, 1" Pressure, Packer (30-32 yard)	2				*

CHASSIS			HOSE CHANGE INTERVAL			
Part Number	**Description**	**Qty.**	**3 mo.**	**6 mo.**	**9 mo.**	**1 year**
QA3-EFFF-045	Hose Ass'y, 1/2" Return, Packer	1				*
QA6-FKFK-011	Hose Ass'y, 1" Return, IC Valve	1				*
QC3-FFFF-026	Hose Ass'y, 1/2" Pressure, Hoist Cylinder	2				*
QC3-FFFF-036	Hose Ass'y, 1/2" Pressure, Hoist	1				*
QE5-EHFK-019	Hose Ass'y, 3/4" Return, Loader	1				*

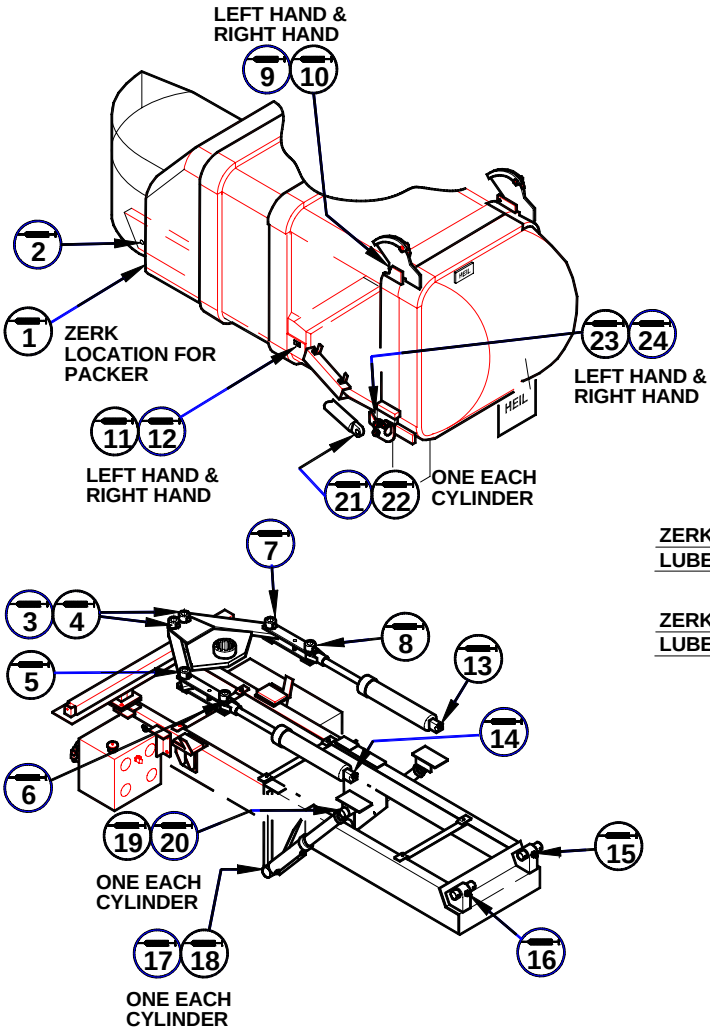
PUMP KIT			HOSE CHANGE INTERVAL			
Part Number	**Description**	**Qty.**	**3 mo.**	**6 mo.**	**9 mo.**	**1 year**
057-2337-XXX	Hose Ass'y, 1" Pressure x XXX" Long	1				*
057-2338-XXX	Hose Ass'y, 3/4" Pressure x XXX" Long	1				*
HH9-XPXP-XXX	Suction Hose, 2" x XXX" Long	1				*

Note: Replacement schedule based on 1000 cycles/5 days a week.

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GREASE FITTING LOCATIONS

Note:
Clean fittings before applying grease and always pump enough grease into joint to remove the old grease. Wipe off excess.



ZERKS 1 THROUGH 8
LUBE DAILY/8 HRS

ZERKS 9 THROUGH 24
LUBE WEEKLY/50 HRS

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BODY PROP POSITIONING

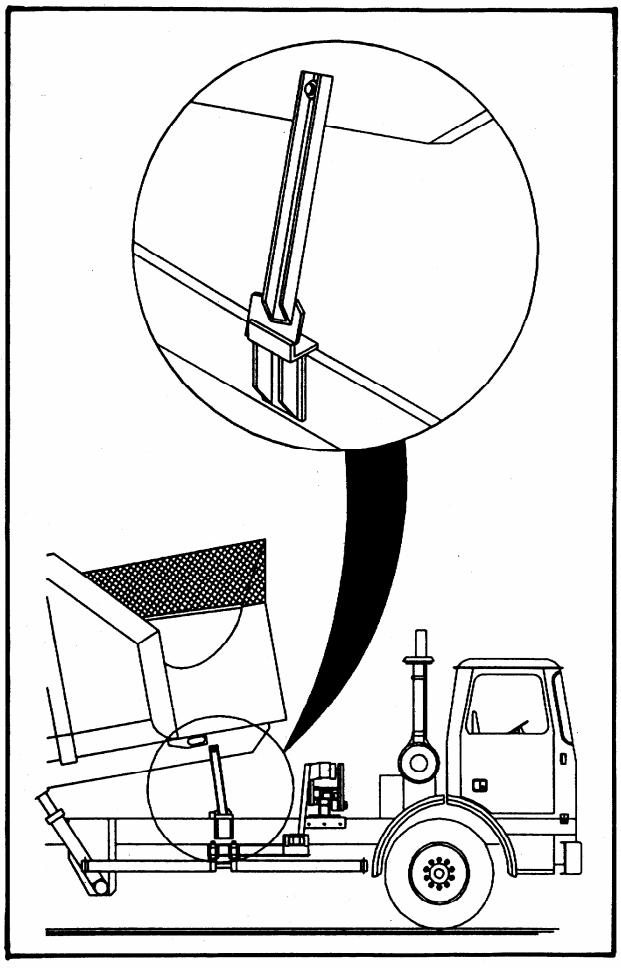
BODY PROPS

Body props are supplied with the unit and are located on both sides of the unit.

NOTE: Empty body of all refuse before using body props.

A. To lower props - partially raise the body and rotate the prop down. Lower the body so props mate with their rest points and all load is removed from the body raise cylinders, see figure below.

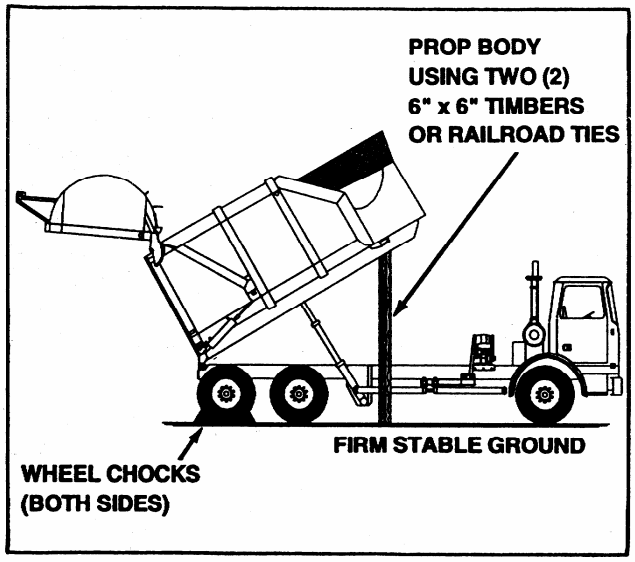
B. To store props - partially raise the body, return props to transit position.



Be sure body in unloaded before using body props.

ALTERNATE BODY BLOCKING

In the event the body is in a position in which the factory props CANNOT be used, an alternative method for blocking is shown in the figure below. Be sure timbers are securely braced against body crossmembers.



⚠ DANGER

Whenever the body is in any elevated or raised position,it must be securely propped or blocked so it can not fall on anyone. Failure to do so may result in injury or death.

IMPORTANT

IF PROPER EQUIPMENT IS NOT AVAILABLE OR IF YOU ARE INEXPERIENCED IN PERFORMING THE ABOVE, DO NOT ATTEMPT REPAIRS. GET EXPERIENCED HELP AND PROPER EQUIPMENT BEFORE PROCEEDING.

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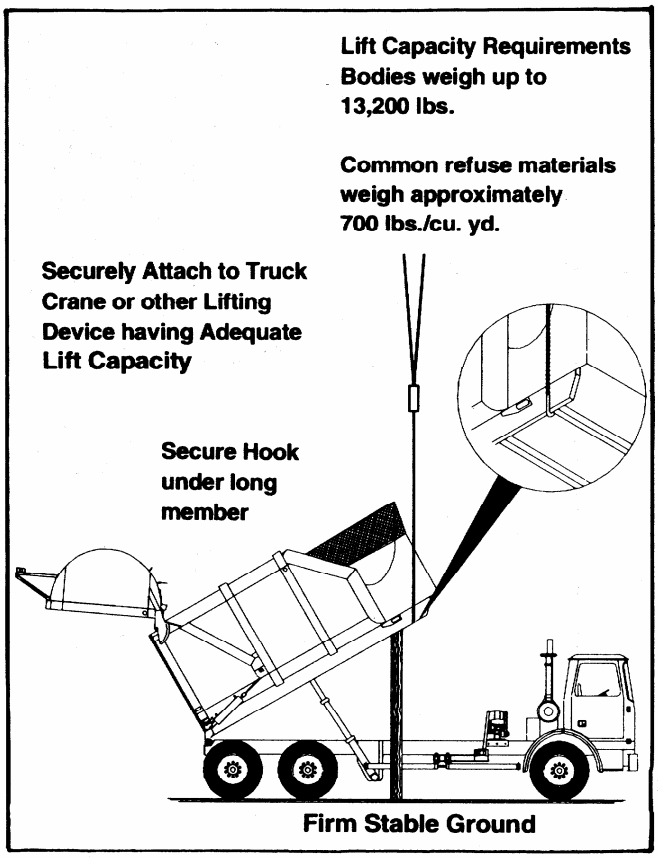
BODY PROP POSITIONING

LOWERING A RAISED BODY WHEN THE IN-CAB OPERATING CONTROLS BECOME INOPERATIVE OR IF RAISED BODY WILL NOT LOWER FOR ANY OTHER REASON.

⚠ DANGER

Never enter between a raised body and chassis frame as it may descend and cause injury or death. Read and understand the following instructions before proceeding.

1. Make sure all persons are cleared at least 30' away from the vehicle to avoid potential injury or death while performing the following steps, unless otherwise indicated herein.
2. Set vehicle parking brake and chock or block wheels securely so the vehicle cannot move.
3. Either allow the load to finish dumping, or if part of load is stuck in body, use a backhoe or front end loader to remove balance of load. NOTE! Use extreme caution not to overturn vehicle.
4. Block the raised body with two (2) 6" x 6" timbers of sufficient length or railroad ties as shown (in Figure 6 to support body (and load if unable to remove load).
5. Connect a chain or cable sling to an overhead crane, truck crane or other lifting device having adequate capacity to safely hold and lower the body and load.
6. Attach the chain or cable device with hooks, all of adequate lift rating, to the body rubrail just behind the front crossmember as shown. Snug up the tension on the sling with the crane, without relieving the pressure from the body supporting timbers.
7. With the chocking and timber blocking still in place, from a position on the ground, under the chassis frame, shift the control valve, at the valve location into the "Lower" position. If the valve is spring centered, wire or lock the valve in the "Lower" position.
8. To prevent injury or death, move out from under the truck chassis and clear all people from the area where the raised body could potentially overturn. Use the crane mechanism to slightly raise the Rapid Rail body to relieve the pressure from the body supporting timbers. Be sure the crane lifting device is securely attached to the body and that both the crane and body are stable before removing body supporting timbers. Remove body supporting timbers, being sure not to place your body or limb between the Rapid Rail body and chassis frame.



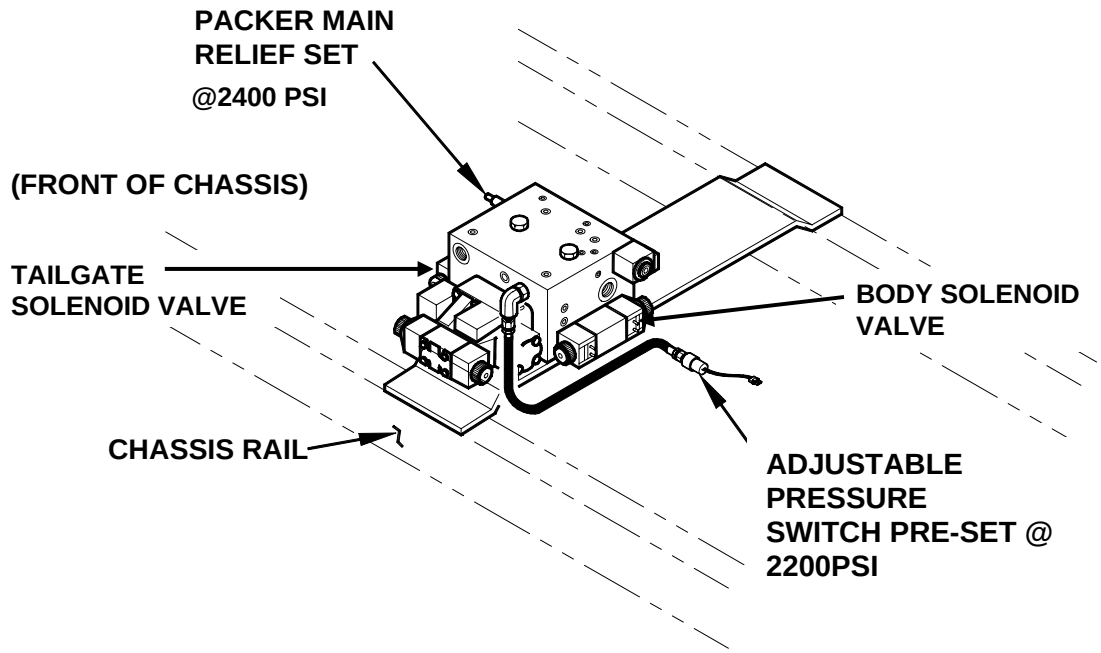
9. Using the crane, slowly lower the body in a controlled manner until it is resting on the chassis frame.
10. Proceed to perform the repairs or replacement necessary to correct the control mechanism failure, or other malfunction, by qualified and trained personnel, such as your authorized Heil Distributor.

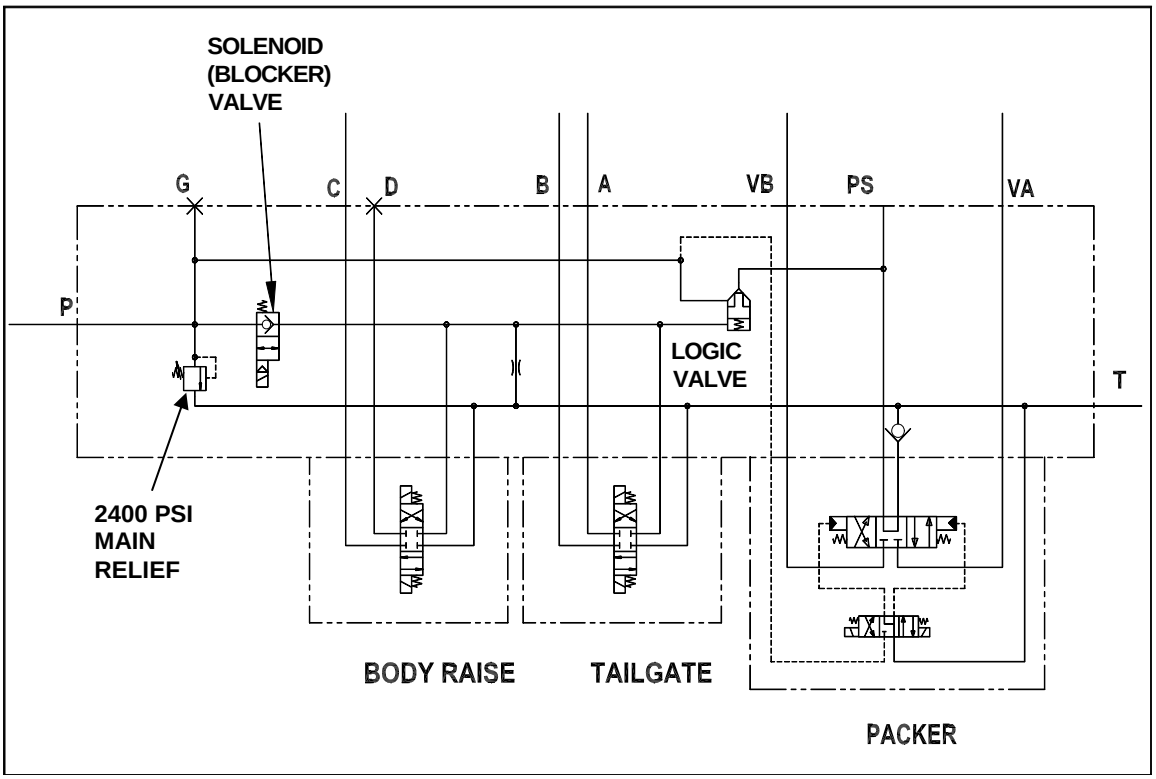
IF PROPER EQUIPMENT IS NOT AVAILABLE OR IF YOU ARE INEXPERIENCED IN PERFORMING THE ABOVE, DO NOT ATTEMPT TO LOWER THE BODY OR ATTEMPT REPAIRS. IN EITHER CASE GET EXPERIENCED HELP AND PROPER EQUIPMENT BEFORE PROCEEDING. IF YOU SHOULD HAVE ANY QUESTIONS CONCERNING ANYTHING CONTAINED IN THESE INSTRUCTIONS, PLEASE CONTACT THE HEIL CO. FIELD SERVICE DEPT. (205) 845-6446.

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PACKER/BODY VALVE

The packer valve is located between the chassis rails and controls the packer panel left and right movements, body raise/lower and tailgate raise/lower functions.





PACKER/BODY VALVE HYDRAULIC SCHEMATIC

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PACKER, TAILGATE & BODY VALVE TROUBLESHOOTING

1) Packer doesn't move

Operate manual overrides on packer pilot valve.

Packer now moves? – Check for electrical problems such as wiring, solenoid coil, current from controller, or pressure switch failure.

Packer doesn't move.

Operate tailgate

Tailgate moves? – Replace solenoid (blocker) valve #4.

Tailgate doesn't move? – Check for bad pump or relief valve #5

2) Packer operates but tailgate and/or body raise does not

Remove valve #4 and replace with an SAE –10 plug. Run truck BRIEFLY to operate the tailgate or body raise function. Shut truck down as soon as possible.

Tailgate or body raise operates? – Check for wiring, bad coil or bad solenoid (blocker) valve #4.

Tailgate or body raise doesn't operate?

Start truck again and run BRIEFLY to operate manual overrides on tailgate or body raise valve. Shut truck down as soon as possible.

Tailgate or body raise now moves? – Check for wiring, coil or controller problem.

Tailgate doesn't move? – Replace logic valve #3

3) Packer operates but has insufficient force or speed

Install pressure gage and "bottom out" the tailgate lower function

Main relief #5 should be set for 2400 psi. Adjust as required.

If 2400 psi is not obtainable, replace relief valve #5. Then, if not obtainable, replace pump.

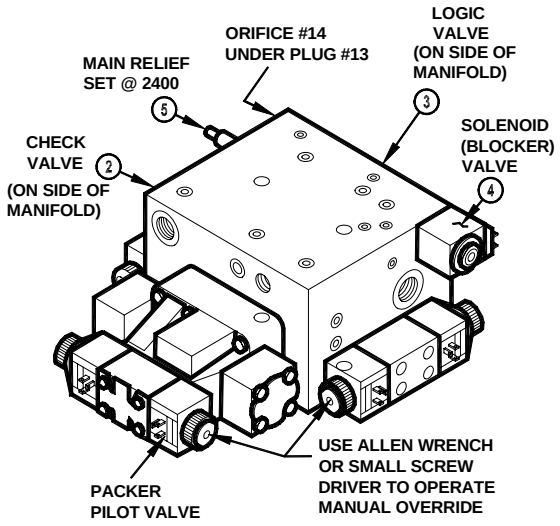
4) Packer blade "falls away" while body is elevated

Replace check valve #2

5) Packer operates OK, but is slow to start after operation of tailgate or body raise.

Clean orifice #14.

Additional note: If spools are sticking, operation of manual overrides can free them.



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HYDRAULIC PRESSURE SETTING PROCEDURES

The following pages detail the procedures for adjusting the packer circuits. These adjustments require two (2) persons, one of which must be a fully trained and authorized operator.

CAUTION: Prior to making any adjustments to the packer circuit, the body must be properly blocked with body props and in the elevated position.

The unit uses a tandem pump for the system operation. The large section of the pump (30 GPM @1500 engine RPM) operates the packer, body raise and tailgate circuits. The small section of the pump (16 GPM @ 1500 engine RPM or 725 engine RPM for OIGAI systems) operates the loader functions.

ADJUSTMENT PROCEDURE FOR PACKER CIRCUIT

1. **Packer Pressure Switch** is located on the hydraulic tank and is plumbed into the side of the packer valve. This switch is adjustable and is set at 2200 +/-50 PSI. To adjust the packer pressure switch setting follow these steps.

 With the engine off, install an accurate 0-3000 PSI gauge in the quick disconnect port.

 Lower the body main relief valve to 2200 psi +/-50. See “Body Main Relief Adjustment” for proper procedure.

 Lower the packer pressure switch setting to a setting lower then 2200 psi.

 With the engine running, set the Auto/Manual Packer rocker switch (on the control panel in the cab) to the manual position. Collapse a Packer cylinder by depressing the Left/Right rocker switch on the control panel. The in cab buzzer should sound when a packer cylinder is bottomed out.

 Keep the rocker switch depressed and slowly increase the pressure switch setting until the in cab buzzer shuts off. The packer pressure switch is now set (matched) to the 2200 psi.

 Reset the body main relief valve to unit specifications.

2. **Body Main Relief Valve** is located on the packer valve. This is a relief that can be adjusted slightly and can be set as follows.

 Set the Packer Auto/Manual rocker switch to the manual position and depress the Packer rocker switch to fully collapse one of the packer cylinders.

 Read the pressure gauge at 1500 engine RPM.

 Remove the cap or castle nut from the relief cartridge adjusting screw.

 Loosen the adjusting screw jam nut on the relief cartridge adjusting screw and turn the adjusting screw clockwise to increase the pressure until the gauge reads 2400 PSI.

 Tighten the locking nut and replace the plastic cap (if applicable).

 CAUTION: HYDRAULIC PRESSURE ABOVE 2400 PSI WILL CAUSE EXCESSIVE PIN WEAR AND REDUCED LINKAGE LIFE.

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OVERSPEED SWITCH

CONNECTING THE VEHICLE WIRING HARNESS

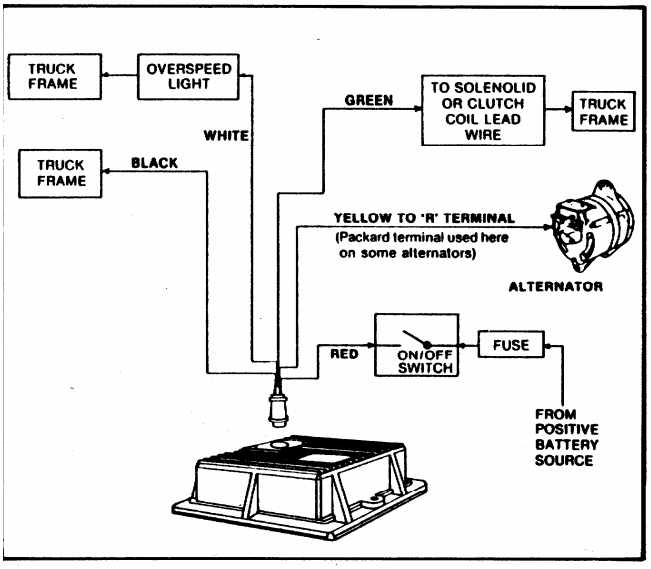
Black — Ground Wire: This wire should be attached to the truck frame. Caution: Body attachments do not always provide good grounds.

Red — Power Input To 108-4545: Connect this line to the output terminal of the on/off switch controlling the clutch or PTO.

Green — Power Output From 108-4545: (Normally open output): Connect this line to solenoid or clutch coil.

Yellow — RPM Input To 108-4545: Connect this line to alternator 'R' terminal.

White — Overspeed Indicator Light: (Normally closed output); Connect this line to overspeed light.



VEHICLE WIRING HARNESS TEST

1. Place positive (+) lead from voltmeter in the TACH calibration jack and the negative (-) lead to frame. Set on 0-20 vdc scale.
2. Start engine advance engine to 1200 RPM and return to idle.
3. Increase and decrease engine RPM and observe voltmeter. The voltage should increase and decrease with engine speed.
4. Place positive (+) lead from voltmeter in the engage jack. If there is no voltage then unit is not receiving current on the red wire.
5. When the engine is shut off and the PTO/clutch switch is activated the red overspeed light should be on.

Refer to trouble shooting guide if any test fails.

108-4545 SPEED ADJUSTMENT PROCEDURE USING A VOLTMETER.

1. The 108-4545 has test jacks to allow adjustment by use of a voltmeter. The test jack voltages will be in the 0-6 VDC range. Your voltmeter should be on the lowest voltage selection which covers the range. Use the positive meter probe in the test jacks with the negative probe grounded to truck frame.
2. Start the engine, engage the PTO/clutch switch, briefly advance the engine to 1200 RPM and return to idle.
3. The TACH calibration will set the 108-4545's internal tachometer circuit to match the truck's tachometer. This test jack voltage will rise and fall with the engine speed, just as the vehicle's tachometer. Use the adjustment screw to adjust the voltmeter so that the meter displays 1.0 VDC when the truck TACH shows 1000 RPM. The meter should then display 1.5 VDC at 1500 RPM, 2.0 VDC at 2000 RPM, etc.
4. Once you have the RPM set for 1.0 VDC per 1000 RPM you can turn the engine off.
5. Make sure there is power at the 108-4545 (overspeed light should be on). Place the positive lead into the disengage jack. Using the disengage

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adjustment screw adjust the voltmeter so that the display shows your desired disengagement speed based on the relationship that 1.0 VDC=1000 RPM. (Example: a disengage speed of 1800 RPM will show 1.8 VDC on your voltmeter.)

6. Place the positive lead into the engage jack. Using the engage adjustment screw adjust the voltmeter so that the display shows your desired engagement speed based on the relationship that 1.0 VDC=1000 RPM.

NOTE: The DISENGAGE is to be set first, then the ENGAGE. Also, when the engine is running the ENGAGE test jack will show 6 VDC or 6000 RPM when the 108-4545 has engaged the PTO or pump.

ADJUSTMENT PROCEDURE WITHOUT VOLTMETER

CAUTION: DO NOT TAMPER WITH TACH CALIBRATION SCREW ON 108-4545.

Helpful hint: Place a 12V test light into green wire circuit to help you determine when the PTO/clutch is engaged or disengaged.

1. Start engine, engage PTO/clutch switch, briefly advance engine to 1200 RPM and return to idle.
2. With the PTO/clutch on, turn the disengage screw five turns clockwise and the engage screw five turns clockwise.
3. Advance engine to desired disengage speed and hold.
4. Slowly turn disengage screw counter clockwise until the PTO/clutch turns off. The red overspeed light should come on.
5. Reduce the engine speed to the desired engage speed and hold.
6. Slowly turn engage screw clockwise until the PTO/clutch turns back on.

USING THE ET-100 WITH THE 108-4545

If using the ET-100 Electronic Systems Performance Test Set refer to the ET-100 operating instructions.

An additional set of conversion plugs will be required (108-4545-06) to convert an existing ET-100 for use with the 108-4545

RECALIBRATION PROCEDURES

1. Turn 108-4545 TACH calibration screw 22 turns clockwise.
2. Turn disengage screw 15 turns clockwise.
3. Turn engage screw 15 turns clockwise.
4. Follow the adjustment procedures.

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OVERSPEED SWITCH
TROUBLE SHOOTING GUIDE

PROBLEM	TEST Voltmeter/ET-100	CAUSE	SOLUTION
Unit will not engage and overspeed light not on	No current at red wire. /No red light on ET-100.	• Blown fuse. • Poor ground connection. • Reverse polarity. • Connection, splice or harness connection loose.	• See problem "Blown Fuse" • Check crimped and frame connections. • Interchange red and black leads. • Check crimped connections. Make sure pin connector is in proper alignment and ring tight.
Unit will not engage and overspeed light always on	Voltage at TACH jack does **not** increase with engine speed. / No yellow light.	• Alternator not engaged. • Incorrect alternator terminal. • Poor or loose connection.	• Briefly run engine between 1200-1500 RPM. • Contact dealer. • Check crimp and connection of brown wire.
	Voltage at TACH jack does increase and decrease with engine speed. / Yellow light on.	• Poor or loose connection. • Unit out of adjustment.	• Check crimp and connection of green wire. • See adjustment procedure.
Unit will not disengage	Voltage at green wire. / Green light always on.	• Unit out of adjustment. • Faulty 108-4545	• See adjustment procedure. • Return for inspection.
Intermittent operation	Changes in voltage. / Any flashing light.	• Poor connection.	• Check crimped and ground connections.
Blown fuse		• Failed solenoid or clutch coil, shorted output lead, faulty 108-4545	• Examine wiring harness and connections for possible short circuits. Check out and replace faulty components.

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ISSUED JULY 1998

10 POINT AUTOLUBE
272-8337

OPERATION

The HEIL Rapid Rail 10-Point Automatic Lube System is used to lubricate the packer mechanism. It is designed to apply grease to each of the bearings for the packer each time the tailgate is raised. Hydraulic pressure of the tailgate raise circuit is utilized to pressurize a 3" diameter cylinder under the front of the packer. The cylinder has welded end caps and contains a piston inside.

A small amount of oil pressurizes the cylinder each time the tailgate is raised and forces grease out the opposite end. Grease leaving the cylinder flows through two hydraulic hoses connected to manifolds of injectors - six mounted on the packer actuator plate to lubricate the linkage and two behind the left frame rail to lubricate the bearings at each end of the packer shaft. Each injector takes approximately 800 psi to open and stores about 0.15cc of grease for each pin. The grease moves to each lube point through small nylon lines and a fitting to the pin surface.

If one of the hydraulic hoses breaks, all of the grease in the reservoir will drain. If one of the nylon lines breaks, only grease stored in the individual injector will drain.

It is important to inspect the system frequently. Without lubrication the pins and bearings will wear very quickly, such that both pins and bearings will require replacement. The lubrication lines must be visually inspected daily to ensure they are connected to every packer pin, and that every pin is being lubricated. Make sure the chassis engine is stopped before adjusting or repairing any part of the lubrication or packer mechanism system. Broken hoses and fittings should be replaced and the lubrication cylinder/reservoir filled as needed, every two to three weeks with normal use.

Packer System Grease

Double 00 and Triple 000 greases for Auto-Lube Systems:

EP CONOLITH 000	CONOCO
LIDOK 000	EXXON
MOBILUX EP 023	MOBIL
OSSAGOL V 000	SHELL
UNOCAL MM GREASE LITHIUM 000	76 UNOCAL
BIODEGRADABLE GREASE - SL WR AA1 000	SENTINEL

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MAINTENANCE

To refill the lubrication cylinder, raise the body and secure with body props. The tailgate must be closed and locked in position. Rotate the packer so that the lubrication cylinder is in a convenient access position, such as front street side. Turn ignition off.

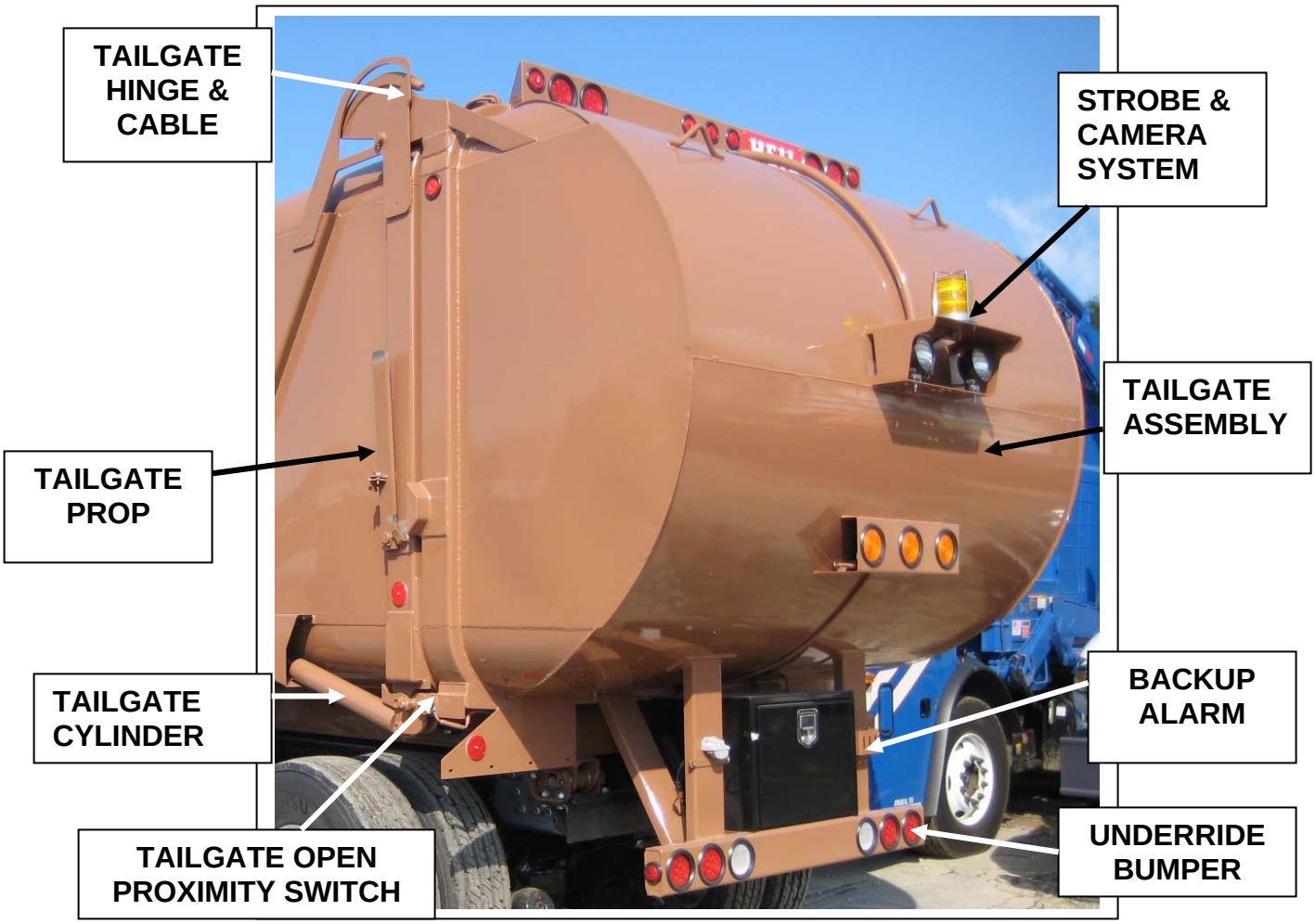
To fill the reservoir, locate the grease fitting on the inside end and the 1/4" grease line coming from the inside end of the cylinder. As you add grease, you must allow hydraulic oil to flow out the opposite end. This can be done in a number of ways:

1. With the packer in MANUAL mode to operate the tailgate, engine off - but ignition switch on, hold down the tailgate-down control. While the valve is trying to lower the tailgate, the oil can flow out of the cylinder, through the valve and into the tank.
2. With the engine off, but ignition switch on and the PTO engaged, place a jumper wire from tailgate-down to the PTO in the lower junction box.
3. Hook up a temporary hose to the oil end of the lube cylinder and let it drain into the tank.

Using a grease gun filled with NLGI 000 grease, fill the cylinder/reservoir from the grease zerk on to the opposite end. This grease is light and thin so that it can pass through lubrication lines. *Do not attempt to use any other grease; to do so will cause the lube line to fail.* Disconnect the jumper line or reconnect the hydraulic hoses. Operate the tailgate open/close mechanism several times to check for leaks and broken hoses.

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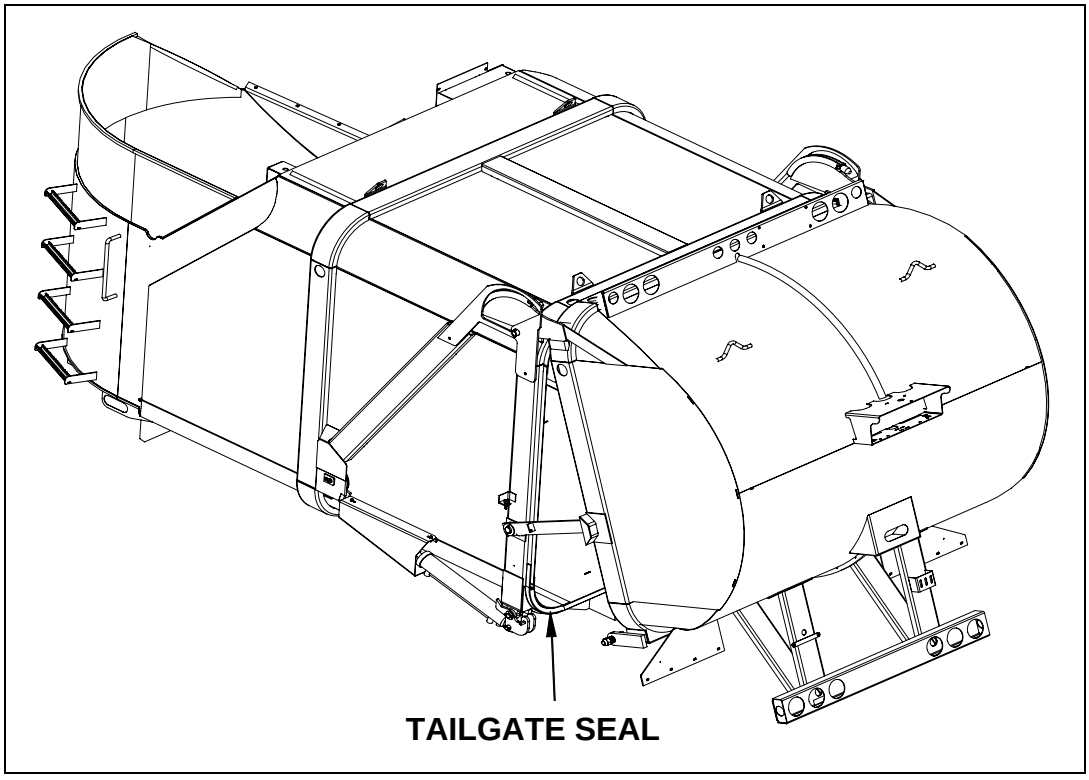
TAILGATE NOMENCLATURE



Shown above are some key items of the tailgate.

TAILGATE SEAL

Periodically check the tailgate seal for insure it mates properly with the body and inspect for possible wear, damage or leaking. Replace if necessary.



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TAILGATE PROPS

Whenever the tailgate is opened for service or maintenance, it must be propped, using the two props on the unit. **BOTH PROPS MUST BE USED.**

⚠WARNING

Stand clear when tailgate is in motion and during unloading cycle. Do not stand under or cross under a raised tailgate.

1. Set unit on flat stable surface and apply the parking brake.

2. Make sure area around tailgate is clear of all people.

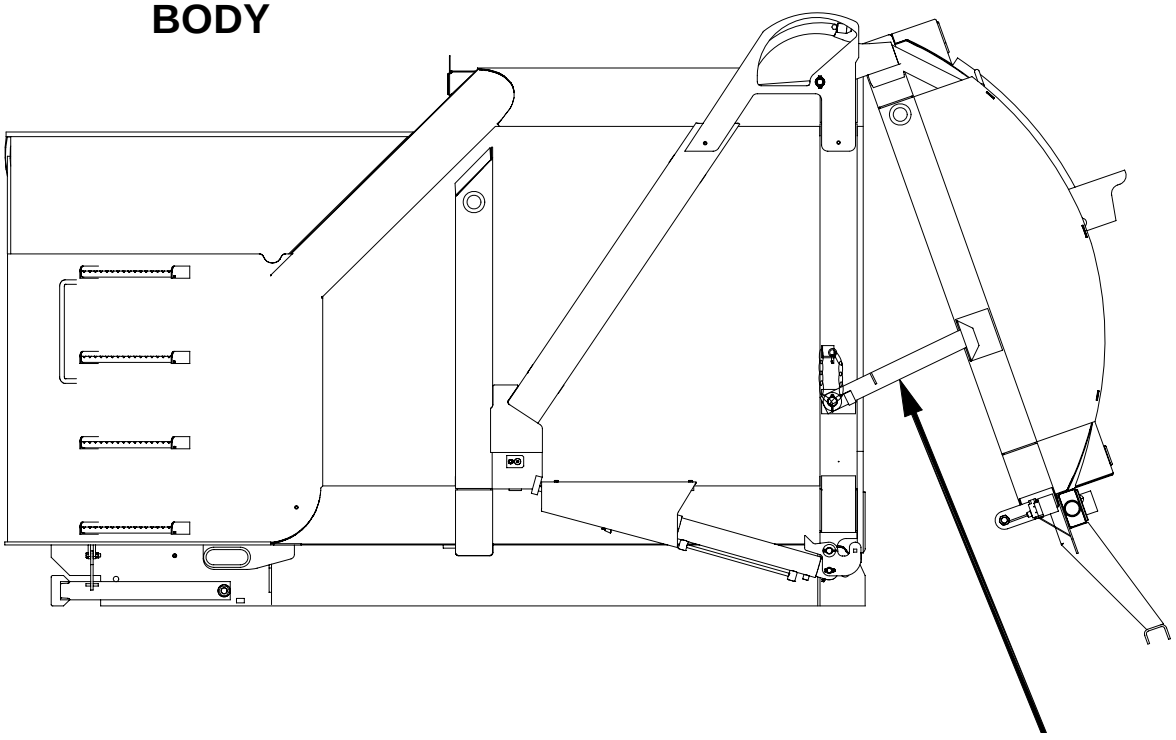
3. Unlock and raise the tailgate enough to lower the prop supports. Use rocker switch in the cab.

4. Remove quick disconnect pin from the props and rotate supports so they rest against the prop brackets.

4. Turn off engine and place unit in a lockout position.

When completed with service, be sure props are stored in there proper position and tailgate lowered and locked.

PROP LOCATED ON BOTH SIDES OF BODY



PROP LOWERED TO REST IN POCKET ON TAILGATE

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TAILGATE PROP POSITIONING

TAILGATE PROP

Whenever the tailgate is opened for service or maintenance, it must be propped. Follow the procedures as listed.

A. BUILDING A PROP - (SEE FIGURE BELOW)

Build a prop per specifications in figure below.

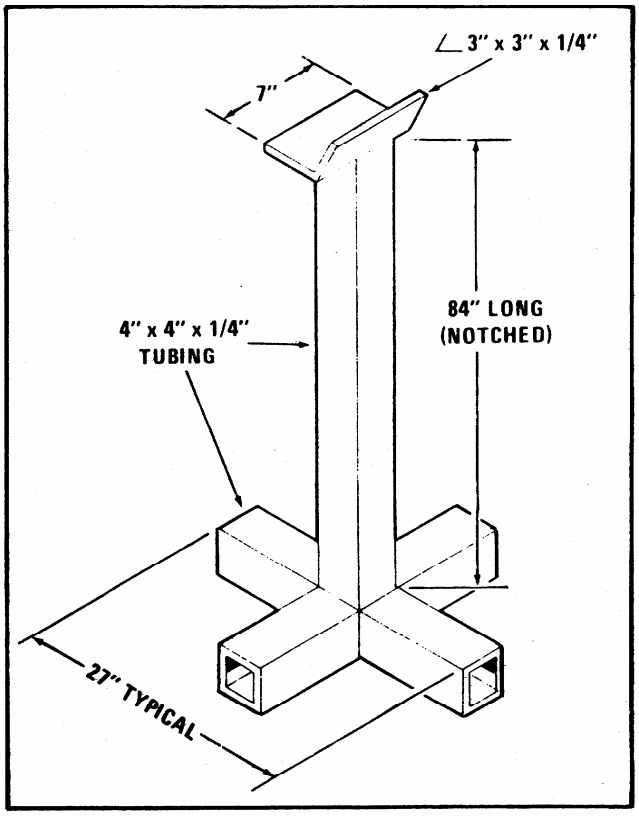


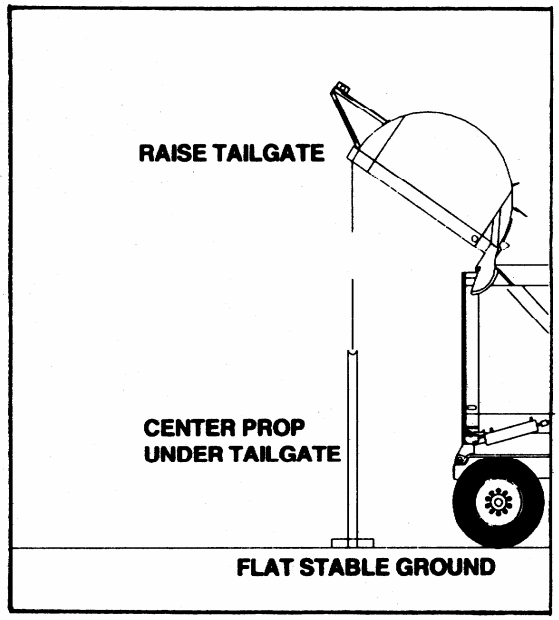
Figure 5.

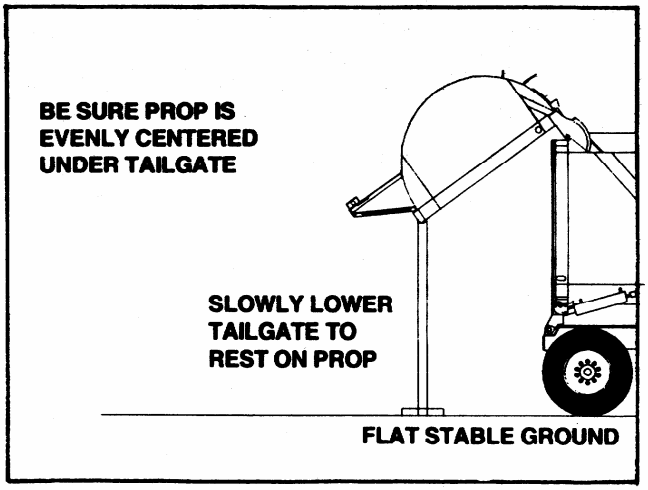
B. PROPPING THE TAILGATE

⚠ DANGER

Stand clear when tailgate is in motion and during unloading cycle. Do not stand under or cross under raised tailgate. Failure to do so may result in injury or death.

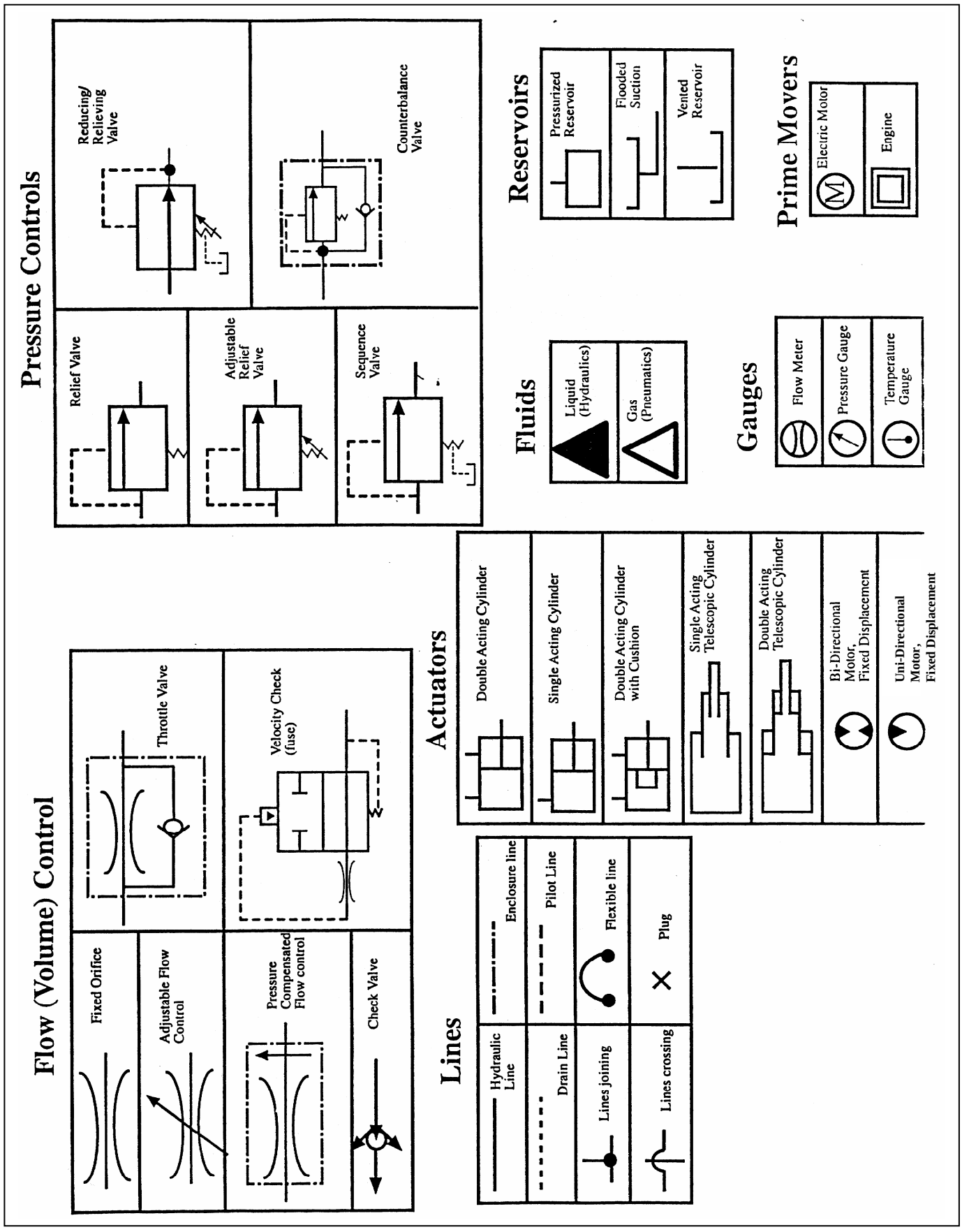
1. Set unit on flat stable surface and apply the parking brake.
2. Unlock tailgate and using the tailgate control lever, raise tailgate. See Operator's Manual for proper procedures.
3. Locate the prop in the center of tailgate.
4. Slowly lower tailgate (by partial movement or feathering of control lever) to rest on prop, see figure at bottom of page.
5. Turn off engine and remove ignition key.



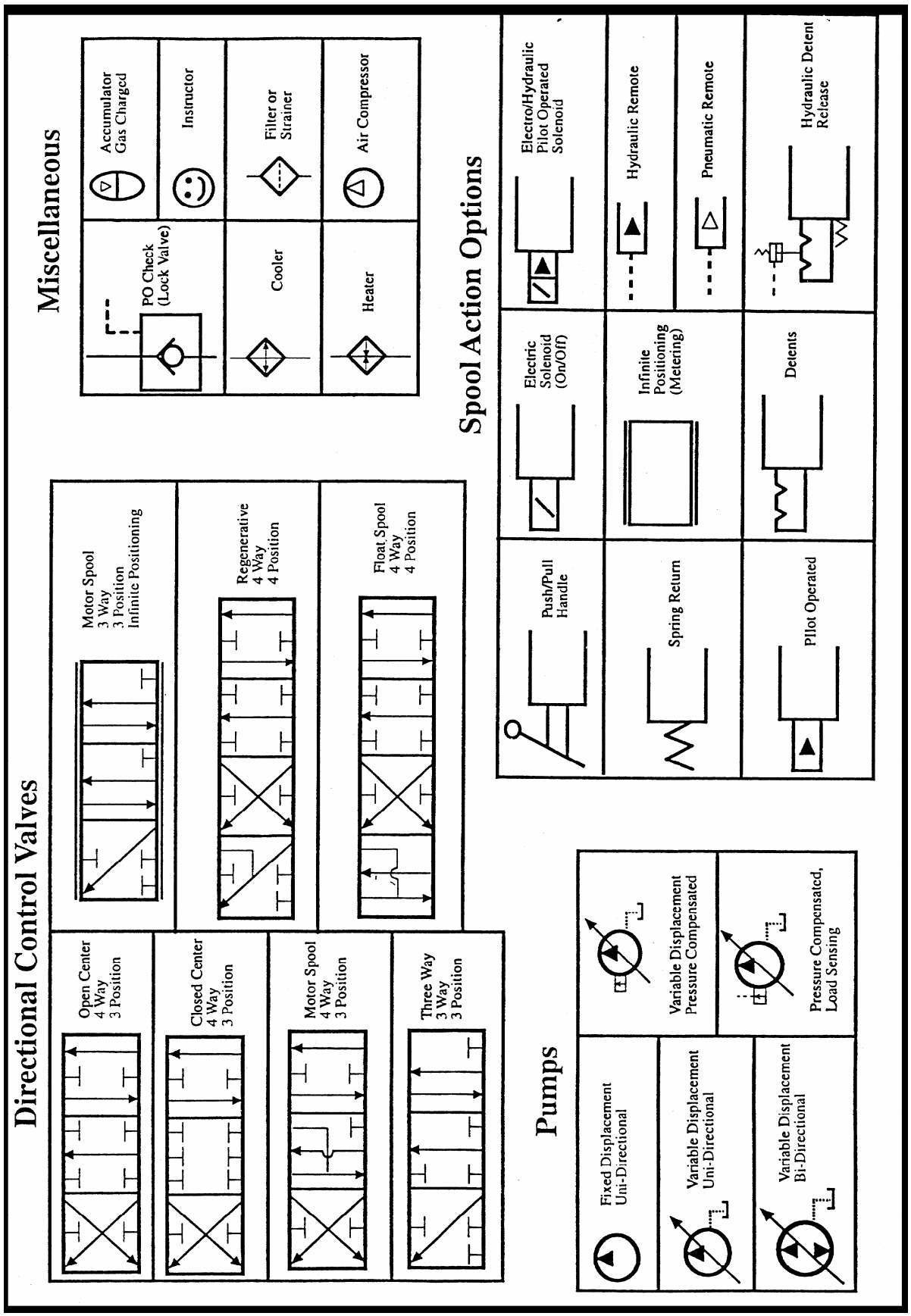


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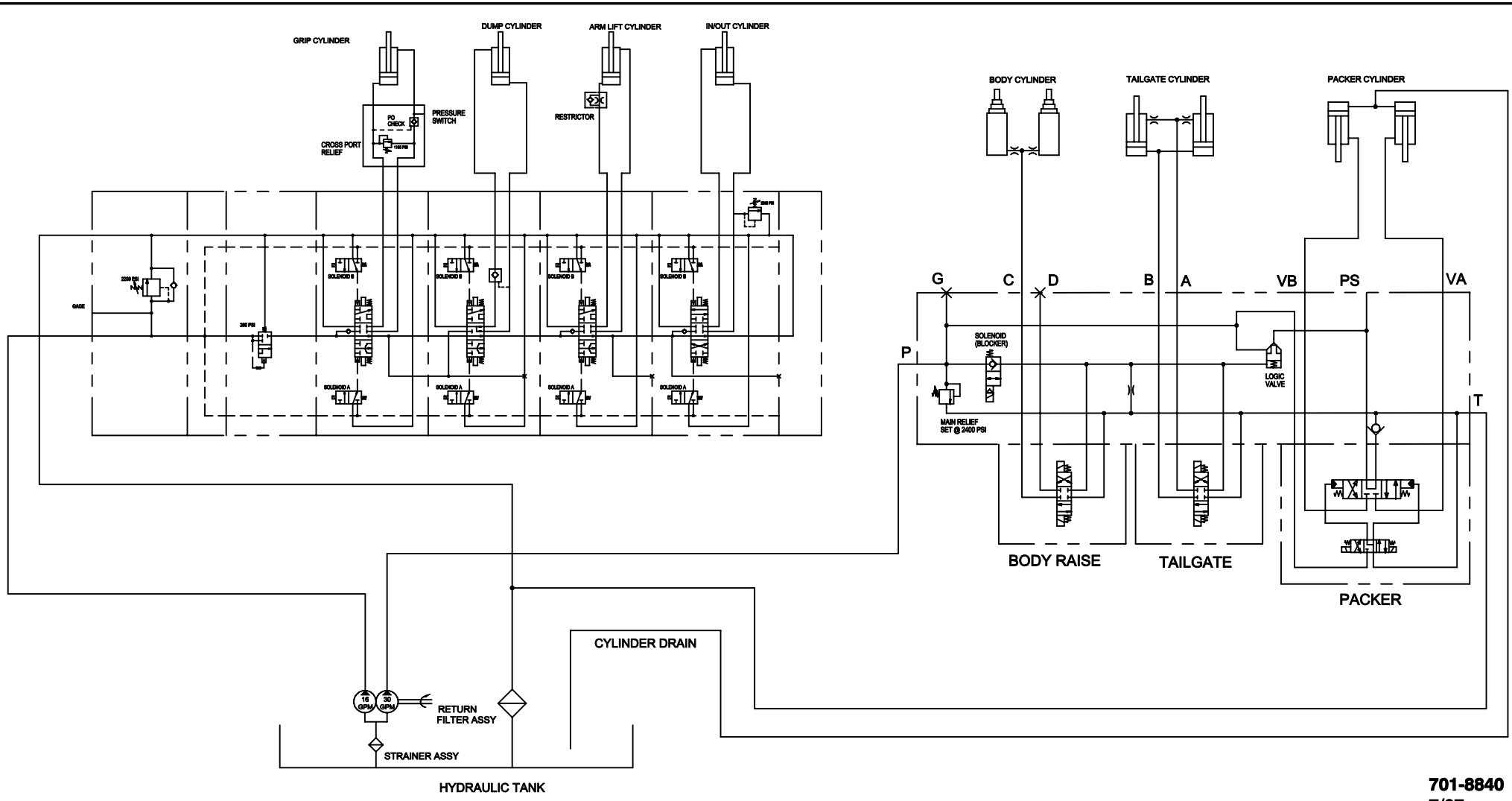
HYDRAULIC SYMBOLS



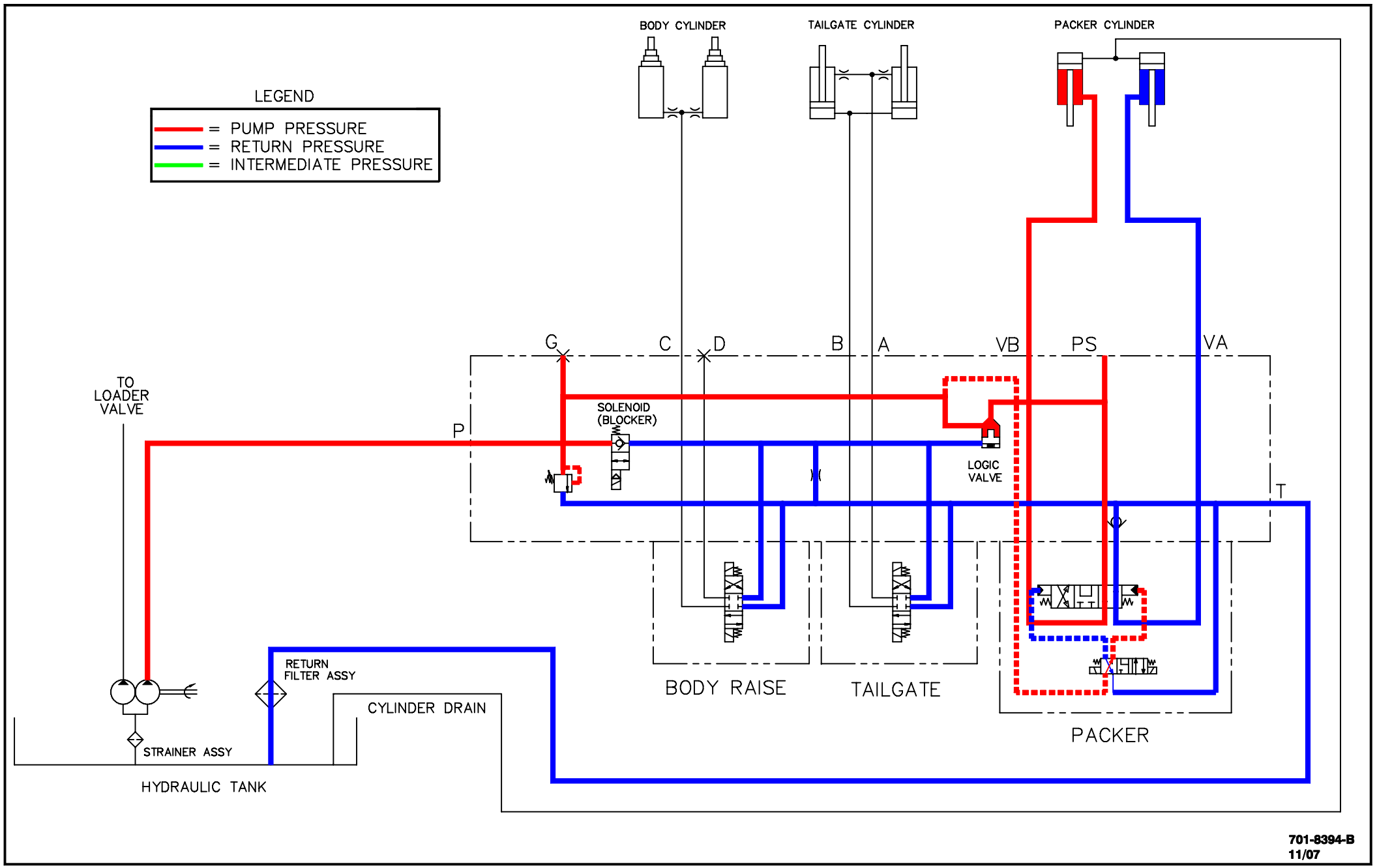
HYDRAULIC SYMBOLS



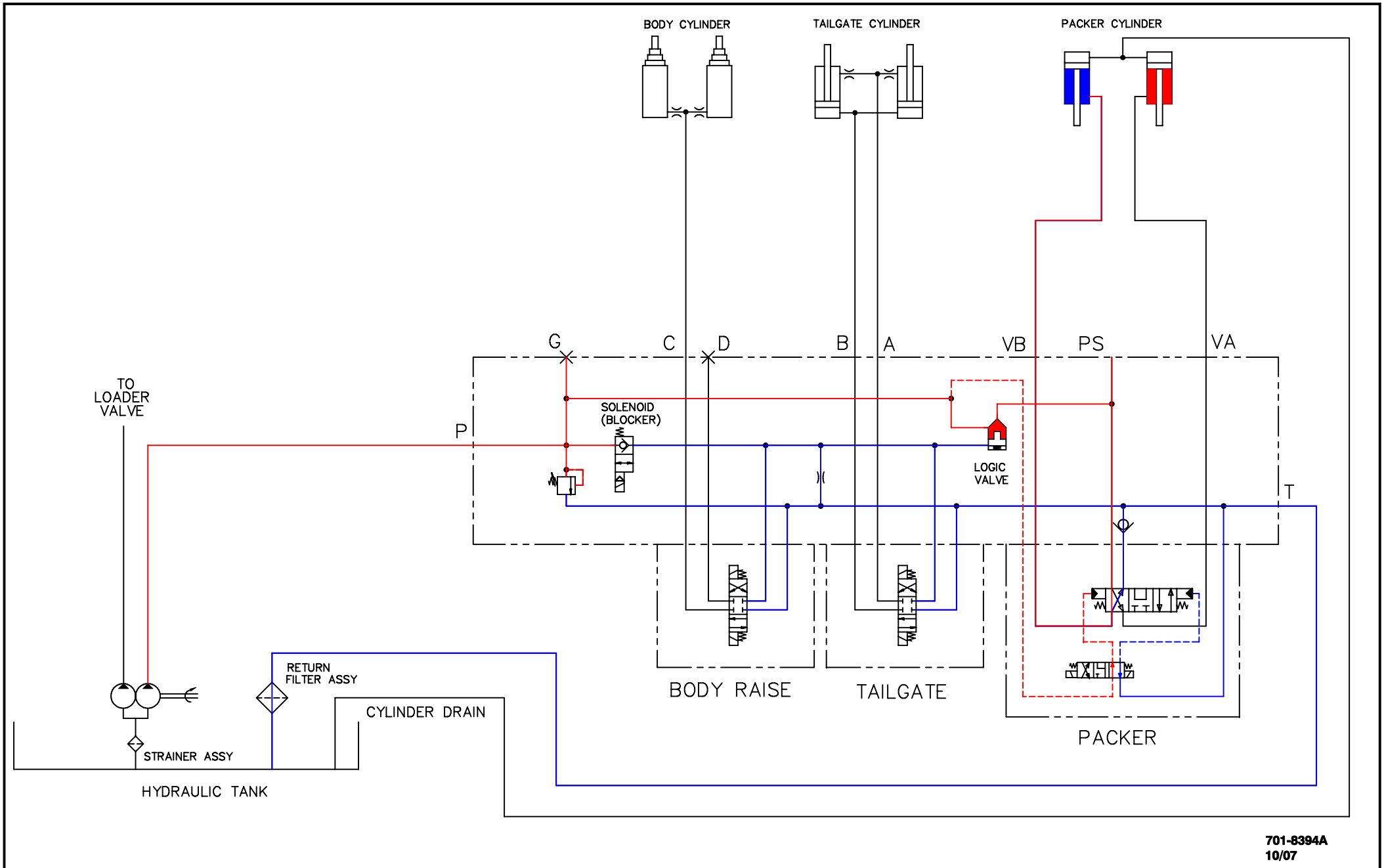
HYDRAULIC SCHEMATIC



PACKER LEFT

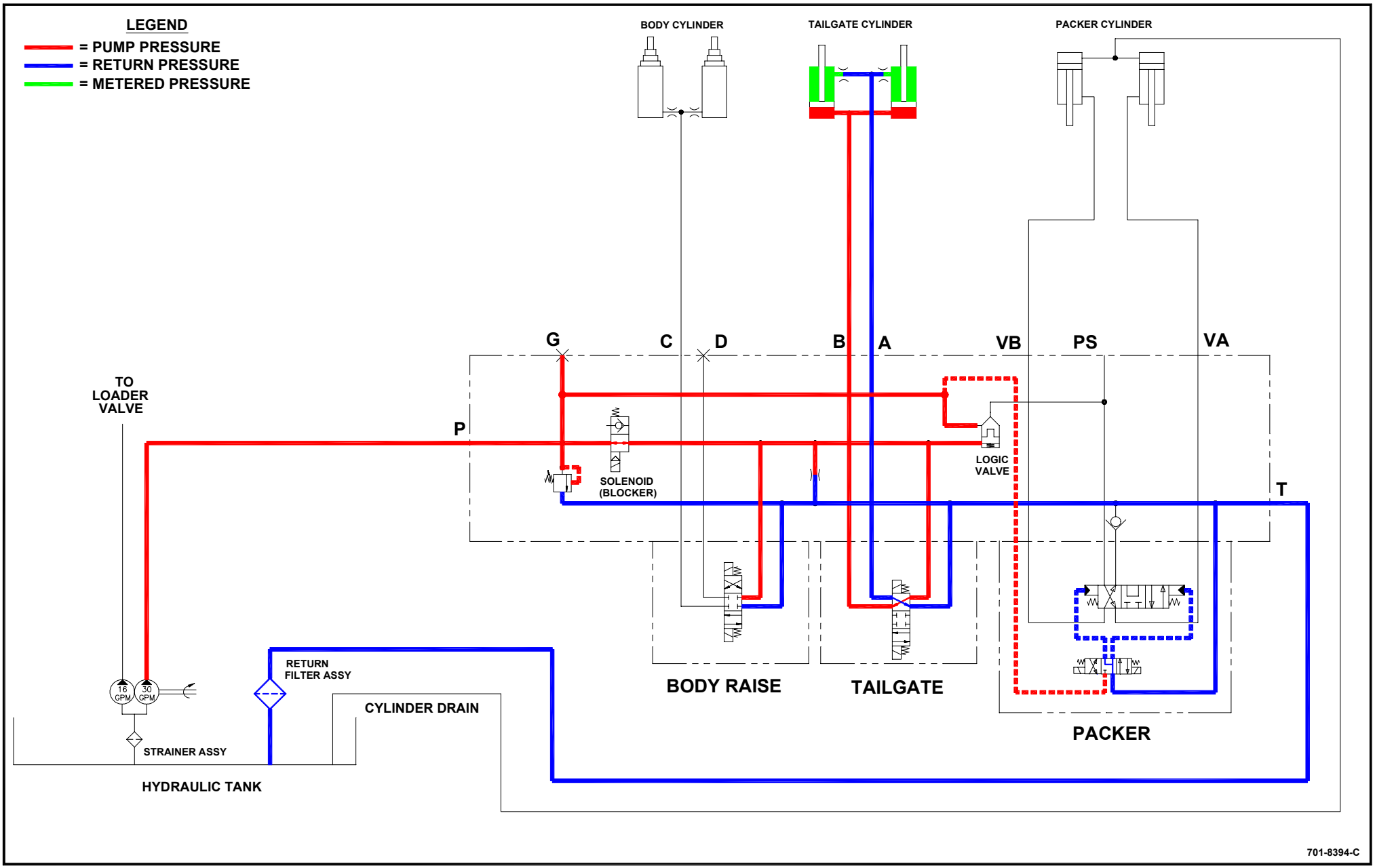

LEGEND
= PUMP PRESSURE
= RETURN PRESSURE
= INTERMEDIATE PRESSURE
BODY CYLINDER
TAILGATE CYLINDER
PACKER CYLINDER
G
C
D
B
A
VB
PS
VA
P
T
TO LOADER VALVE
SOLENOID (BLOCKER)
LOGIC VALVE
RETURN FILTER ASSY
CYLINDER DRAIN
STRAINER ASSY
HYDRAULIC TANK
BODY RAISE
TAILGATE
PACKER

PACKER RIGHT

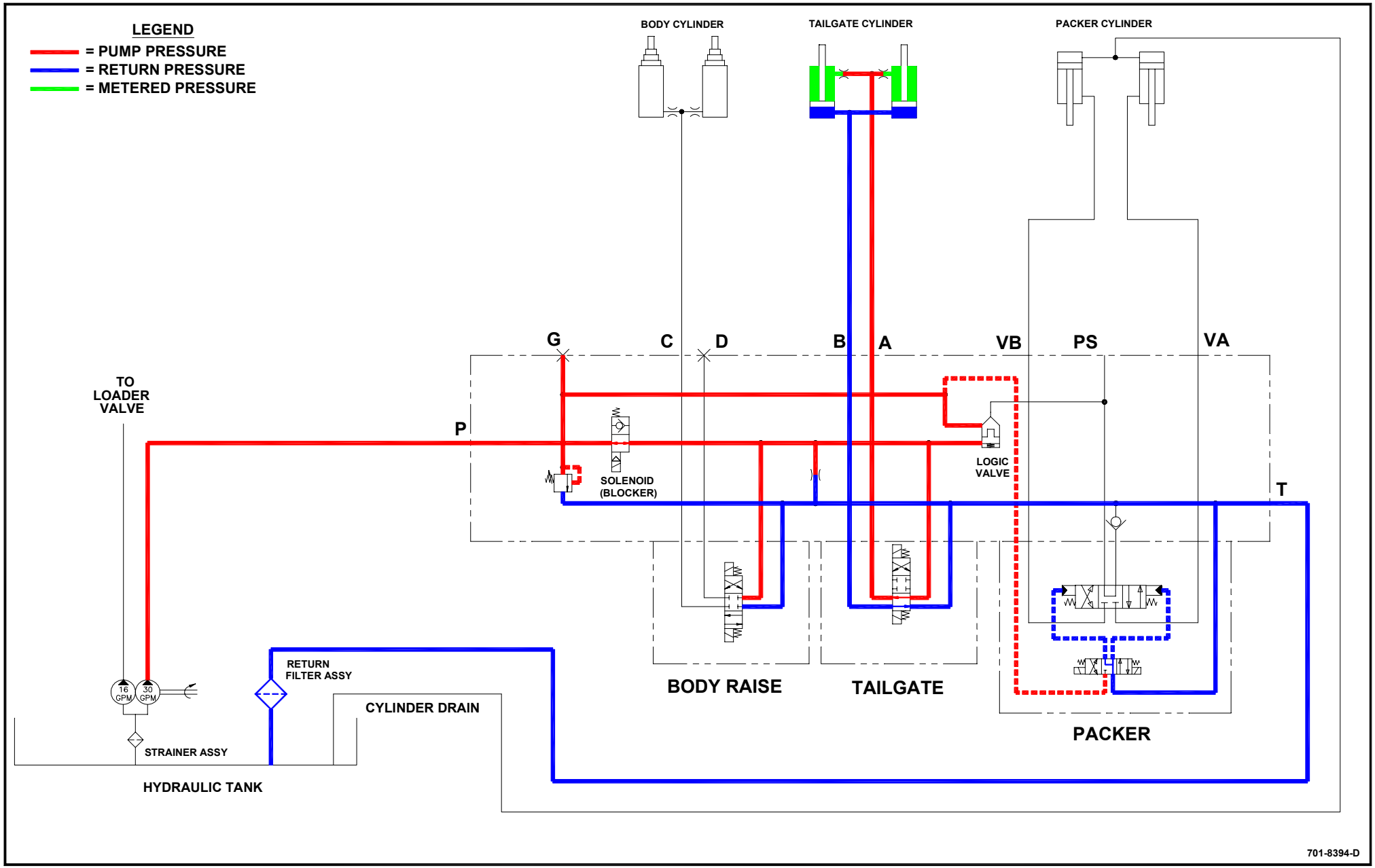


701-8394A
10/07

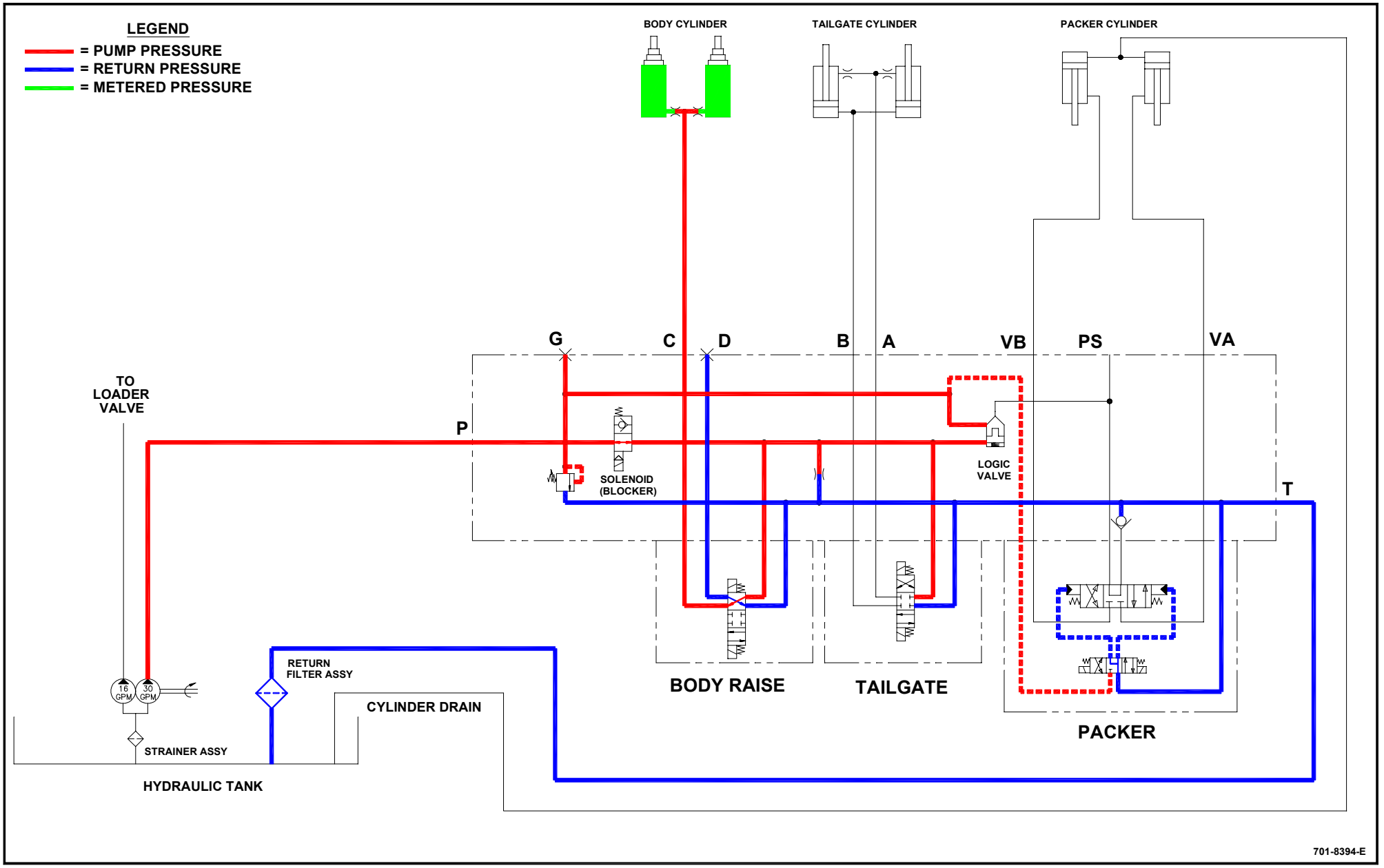
TG LOWER


LEGEND
= PUMP PRESSURE
= RETURN PRESSURE
= METERED PRESSURE
BODY CYLINDER
TAILGATE CYLINDER
PACKER CYLINDER
G
C
D
B
A
VB
PS
VA
P
T
TO LOADER VALVE
SOLENOID (BLOCKER)
LOGIC VALVE
16 GPM
30 GPM
RETURN FILTER ASSY
CYLINDER DRAIN
STRAINER ASSY
HYDRAULIC TANK
BODY RAISE
TAILGATE
PACKER
701-8394-C

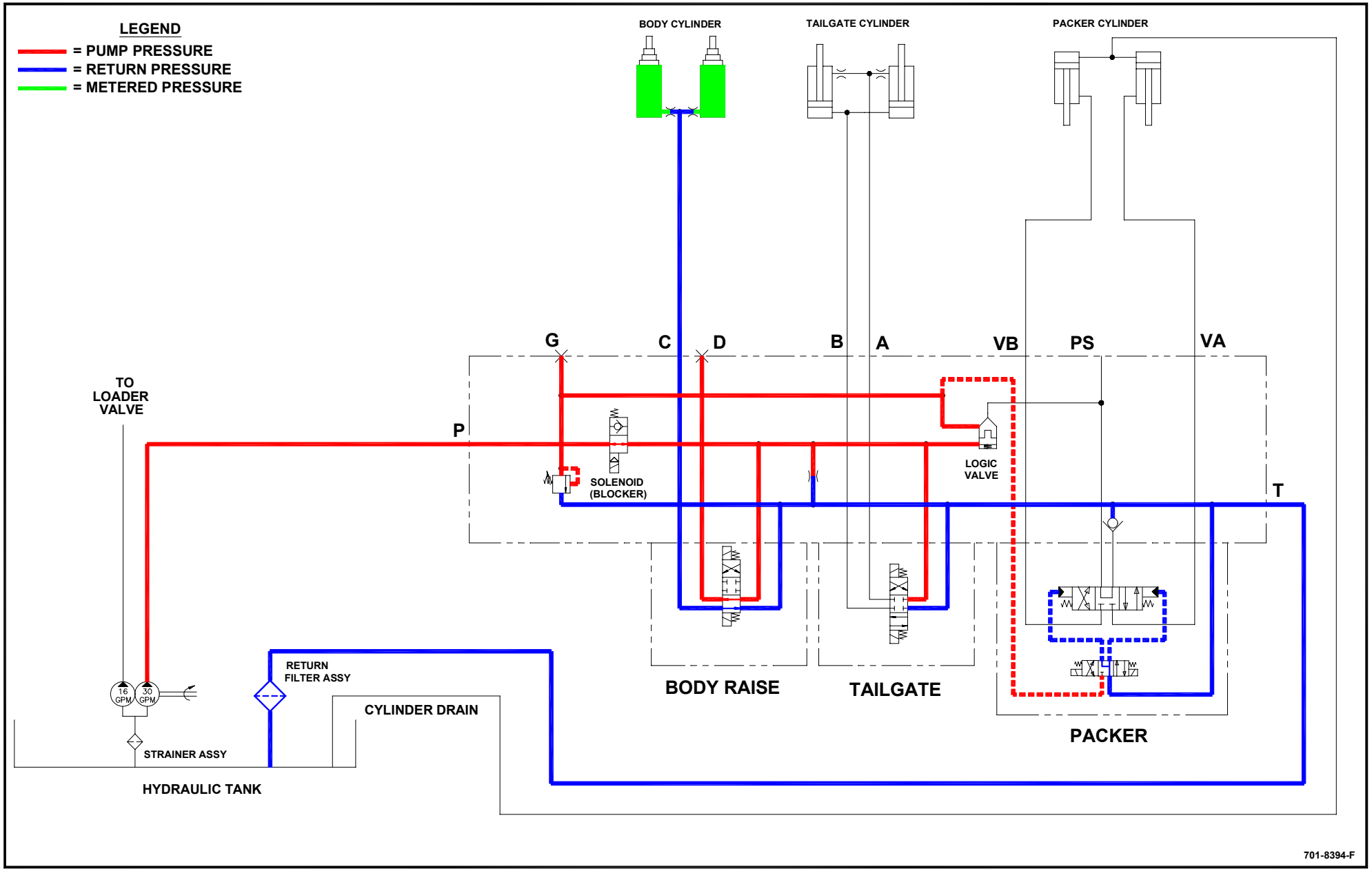
TG RAISE


LEGEND
= PUMP PRESSURE
= RETURN PRESSURE
= METERED PRESSURE
BODY CYLINDER
TAILGATE CYLINDER
PACKER CYLINDER
G
C
D
B
A
VB
PS
VA
P
T
TO LOADER VALVE
SOLENOID (BLOCKER)
LOGIC VALVE
16 GPM
30 GPM
RETURN FILTER ASSY
CYLINDER DRAIN
STRAINER ASSY
HYDRAULIC TANK
BODY RAISE
TAILGATE
PACKER
701-8394-D

BODY RAISE


LEGEND
= PUMP PRESSURE
= RETURN PRESSURE
= METERED PRESSURE
BODY CYLINDER
TAILGATE CYLINDER
PACKER CYLINDER
G
C
D
B
A
VB
PS
VA
P
T
TO LOADER VALVE
SOLENOID (BLOCKER)
LOGIC VALVE
16 GPM
30 GPM
RETURN FILTER ASSY
CYLINDER DRAIN
STRAINER ASSY
HYDRAULIC TANK
BODY RAISE
TAILGATE
PACKER
701-8394-E

BODY DOWN


LEGEND
= PUMP PRESSURE
= RETURN PRESSURE
= METERED PRESSURE
BODY CYLINDER
TAILGATE CYLINDER
PACKER CYLINDER
G
C
D
B
A
VB
PS
VA
P
T
TO LOADER VALVE
SOLENOID (BLOCKER)
LOGIC VALVE
16 GPM
30 GPM
RETURN FILTER ASSY
CYLINDER DRAIN
STRAINER ASSY
HYDRAULIC TANK
BODY RAISE
TAILGATE
PACKER
701-8394-F

All Units



SERVICE MANUAL

SECTION 1
GENERAL INFORMATION

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TP1SMA-10001-0311

Customer Support

Heil Environmental ▪ 4301 Gault Ave. North . Fort Payne, AL 35967-9984· 866.275.4345

All Units

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SAFETY SYMBOLS AND DEFINITIONS

Listed below are the definitions for the various levels of safety hazards. It is important that the operators of this equipment read and understand safety messages as they relate to this equipment operation.

- **DANGER** – indicates an imminently hazardous situation, which if not avoided WILL result in DEATH or SERIOUS INJURY if you don't follow proper instructions.
- **WARNING** – indicates an imminently hazardous situation, which if not avoided COULD result in DEATH OR SERIOUS INJURY if you don't follow proper instructions.
- **CAUTION** – indicates an imminently hazardous situation, which if not avoided ISSUED DECEMBER result in MINOR to MODERATE INJURY if you don't follow proper instructions.
- **NOTICE** – means unit or other property ISSUED DECEMBER be damaged if these instructions are not followed.

The following safety messages are generally in the Operator's Manual for each specific unit or are generic safety messages if an Operator's Manual does not have these safety messages. Other safety alert messages may be in other sections of the Parts and Maintenance/Adjustment Manual, in other sections of the Parts and Service Manual or in an Operator's Manual. You must read and obey all safety alert messages in any manual produced by Heil to support your unit.

⚠ WARNING

Failure to follow all instructions and safety precautions in this manual, in the Maintenance and Adjustment (or Service) Manual, in other manufacturer's manuals and on the safety decals attached to the product could result in serious injury or death to operators or bystanders and/or damage to property.

DO NOT operate this vehicle before you READ and UNDERSTAND the Operator's Manual, the Parts and Maintenance/Adjustment (or Service) Manual for this unit, other applicable manufacturer's manuals and the safety decals on the product.

Each operator of this unit must read and understand all directions in this manual before they first operate this vehicle.

Keep this manual in the cab for new operators and to remind all operators about safe use.

⚠ DANGER **Do not operate the unit or perform repair or maintenance procedures on the unit until you read and understand all of the instructions in this manual. Failure to do so can result in injury or death to operators or bystanders.**

NOTICE **Do not operate the unit or perform repair or maintenance procedures on the unit until you read and understand the instructions in this manual. Failure to do so can result in damage to the unit or other property.**

NOTE: If you do not understand a procedure or instruction, tell the owner or the designated person immediately. Do not operate the unit if you do not understand all procedures and instructions in this manual. The owner or designated person can contact your Heil dealer or Heil for additional help. See page the operator's manual for contact information.

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WARNING Moving equipment can be dangerous to bystanders. Serious injury or death can occur if a person is in the wrong area or is not attentive to the operations. Clear the area of all unnecessary people before you operate the controls.

DANGER Do not enter the hopper unless the unit is in the lock-out mode. When the unit is not in the lock-out mode and a person is in the hopper, the packer panel or the crusher panel can be operated. Serious injury or death can occur if the packer panel or the crusher panel moves while a person is in the hopper.

DANGER Always prop the tailgate when you leave it raised for maintenance, service or cleaning procedures. Any part of your body between the unit's body and the tailgate while you prop the tailgate or when the tailgate is propped is dangerous. Serious injury or death can occur if any part of your body is between the tailgate and the body if the tailgate suddenly closes.

DANGER A tailgate in motion is dangerous. Serious injury or death can occur if a person is struck by a moving tailgate or becomes trapped between the tailgate and the body. Clear the area near the tailgate of all unnecessary people before you lower the tailgate.

DANGER The packer and crusher panels are dangerous. They can cause serious injury or death if a person is inside the hopper. Make sure no one is inside the hopper before you begin a packer or crusher function. Put the unit in the lock-out mode if a person is in the hopper.

DANGER Any part of your body between the unit's body and the chassis or cylinders while you raise the body is dangerous. Serious injury or death will occur if the unit's body suddenly lowers and traps a part of your body. Keep all parts of your body out from underneath the unit's body and away from the cylinders during this procedure.

DANGER Do not raise a body that has refuse while you do maintenance or service procedures. Refuse in the body can make the unit unstable. Always unload refuse from the body before you raise it for maintenance or service procedures. Always use the body props when you raise the body for maintenance or service procedures.

WARNING Raising the body with the tailgate closed can damage the underride bumper. The underride bumper can hit the ground when the tailgate is not fully raised before you raise the body. Serious injury or death can occur and also cause damage to the unit.

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WARNING **Clear all people of the area before you lift a refuse container. Make sure the refuse is secure in the refuse container before you lift the container. Loose refuse can fall and cause serious injury or death.**

CAUTION **Grabbing a refuse container with too much pressure can damage the container. Pieces of the container can "fly" off the container and cause moderate or minor injury to a bystander. Use enough pressure with the grabber to raise the container with the lift arm and not damage the container.**

NOTICE **Grabbing a refuse container with too much pressure can damage the container. The container can become unusable. Use enough pressure with the grabber to raise the container with the lift arm and not damage the container.**

CAUTION **A container that is not locked to the container lift mechanism is dangerous. The container can fall off the container lift mechanism and cause minor or moderate injury. Make sure you engage and lock the container latch bars before you lift the container.**

WARNING **Make sure the unit is in the lock-out mode when you do maintenance or service procedures, or when you go in the hopper, climb on the body or equipment. Equipment can be operated when the unit is not in the lock-out mode. When the unit is not in the lock-out mode, equipment operated while you do maintenance or service procedures, go in the hopper or climb on the body or equipment can cause serious injury or death.**

DANGER **Make sure the unit is on firm, stable ground before you raise the body and clear the area of all unnecessary people. Do not prop a body unless it is on firm, stable ground. A unit not on firm, stable ground can roll when raising or propping the body. This can cause serious injury or death to you or bystanders.**

DANGER **This procedure is dangerous if not performed correctly or equipment fails. Serious injury or death can occur from equipment falling or breaking. Clear the area of all people not necessary for the procedures and correctly perform the procedure. Do not go under the chassis during this procedure.**

DANGER **A full or partially full load of refuse is dangerous while you lower the body with inoperative controls. Refuse in the body can make the unit unstable and cause it to overturn. Serious injury or death can occur if the unit overturns due to instability caused by the loaded refuse. REMOVE the refuse before you block the body.**

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DANGER **Lifting equipment that does not have sufficient lifting capability is dangerous. Equipment can fail and cause serious injury or death to the operator or bystanders. Make sure the lifting equipment has sufficient lifting capability and clear ALL persons not involved with the procedure away from the area.**

DANGER **The lifting equipment can fail. Serious injury or death can occur if the lifting equipment breaks and the body falls or the unit rolls over. Do not place your body or limbs between the unit's body and chassis while you remove the body-supporting timbers. Be attentive and prepared to move quickly away from the unit in the event there is an equipment failure.**

WARNING **The hydraulic fluid can be under pressure and can spray while you open the connection. Hydraulic fluid can cause damage to your eyes, hands or skin. Wear protective eye glasses, gloves and other clothing as necessary to protect you from the hydraulic fluid.**

WARNING **A unit that needs service or repair can malfunction and create a dangerous condition. A part failure during operation can cause serious injury or death to a person or damage to the unit. Repair or replace any failed or defective part immediately.**

DANGER **Contact of the unit with overhead electric lines is dangerous. Serious injury or death can occur. Make sure there is adequate overhead clearance before you raise the container. If the unit does make contact with overhead electric lines do not touch any metal in the cab. Stay in the unit until help arrives.**

NOTICE **Grabbing a refuse container with too much pressure can damage the container. The container can become unusable. Use enough pressure with the grabber to raise the container with the lift arm and not damage the container.**

WARNING **Improper dumping of the refuse can cause the unit to tip or rollover. Serious injury or death can occur if the unit rolls or tips over. Empty as much refuse as you can with the packer panel before you raise the body.**

DANGER **Make sure the unit is on firm, stable ground before you raise the body and clear the area of all unnecessary people. Do not prop a body unless it is on firm, stable ground. A unit not on firm, stable ground can roll when raising or propping the body. This can cause serious injury or death to you or bystanders.**

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WARNING **Do not move the unit forward or backwards excessively fast (lurch) to dump the refuse load. Excessively fast movements with the body raised can make the body unstable and tip or roll the unit over. This can result in injury or death to the operator and damage the unit. Use only sufficient movement to loosen the load so that it will leave the body.**

NOTICE **Do not move the unit forward or backwards excessively fast (lurch) to dump the refuse load. Excessively fast movements with the body raised puts a very high load on the body raise cylinders and could damage one or both cylinders and make the body unstable unable to lower. Inspect the cylinders after you dump each load and replace if necessary.**

WARNING **Isopropyl alcohol is flammable and is harmful to eyes and skin. Keep isopropyl alcohol away from heat or open sources of ignition. Flush eyes and skin with water for 15 minutes after contact. Seek immediate medical help.**

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LOCK-OUT/TAG-OUT PROCEDURES

WARNING **Make sure the unit is in the lock-out mode when you do maintenance or service procedures, or when you go in the hopper, climb in or on the body or on equipment. Equipment can be operated when the unit is not in the lock-out mode. When the unit is not in the lock-out mode, equipment operated while you do maintenance or service procedures, go in the hopper or climb in or on the body or on equipment can cause serious injury or death.**

Put the DuraPack® 5000 unit in a lock-out condition:

- **BEFORE** you enter the unit's body.
- **BEFORE** you climb or stand on the body or roof.
- **BEFORE** you do maintenance, repair or cleaning procedures on the unit.

Follow These Steps:

1. APPLY the brakes. **MAKE SURE** the brakes do not let the unit move and they work properly.
2. CHOCK all wheels.
3. SET the tailgate props when you raise the tailgate for service, maintenance or cleaning.
4. SET the body props when you raise the body for service, maintenance or cleaning.
5. Turn the engine OFF.
6. When there are in-cab controls, TURN the ignition switch to ON then:
 - Move the switches of the hydraulic controls. This relieves the pressure in the cylinders.
 - Turn the ignition switch to OFF.
7. When there are no in-cab controls, move the outside control levers to relieve the pressure in the cylinders.
8. Put a LOCK-OUT TAG onto the STEERING WHEEL.
9. REMOVE the ignition key from the cab, lock the vehicle and put the key in a secure location.



Lock-Out (Do Not Operate) Tag

NOTE: You can order lock-out tags (Part No. 212-1586) through your Heil Dealer or through Heil.

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IMPORTANT!

- Before starting any maintenance, study this section of the manual.
- Read all safety messages and decals on the unit.
- Clear the area of other persons before performing any maintenance.
- Know and understand safe use of all controls.
- It is your responsibility to understand and follow manufacturer's instructions on equipment and care.

SAFETY DECALS ON THE UNIT

Make sure you can read all safety and instruction decals. Clean decals if you cannot read the words. See page 121 for directions on cleaning decals.

Decals must be replaced if the decal is damaged, the decal is missing, or the decal is not readable.

If a decal is on a part that is replaced, make sure a new decal is installed on the new part. See the Parts and Service manual for a complete decal kit and individual decals. Order the decal kit or individual decals from your Heil Dealer or from Heil.

STORING REFUSE IN THE BODY

Heil does not recommend storing refuse in the body overnight. The different types of debris and corrosive elements usually collected can cause severe corrosion inside the body decreasing the life of your body. This corrosion can affect unloading and decrease the structural life of the body. In addition, storing refuse in the body overnight can increase the risk of fire.

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All Units

INTRODUCTION

The following sections are a guide for maintenance and service of the Heil unit. It covers preventive maintenance, adjustment and troubleshooting hints.

In order to diagnose a problem quickly and effectively, a service person must be thoroughly familiar with the machine. This section explains the system and major components to give that knowledge. Diagrams and schematics of the electrical and hydraulic systems are in Service Manual Section 10.

SERVICE/PARTS ASSISTANCE

Assistance in troubleshooting repair and service is available by contacting the authorized Heil Dealer in your area. Heil personnel are trained to give prompt, professional assistance. ALWAYS give the machine model and serial number in all correspondence relating to the equipment.

LUBRICATION INFORMATION

Before performing maintenance, check the job carefully to find all the hazards present and make sure all necessary safeguards or safety devices are used to protect all persons and equipment involved.

HYDRAULIC OIL SPECIFICATIONS

Heil hydraulic oil (MV32) contains the following specifications.

Gravity	API (ASTM D-287) 31.0
Specific Gravity @ 60°F (15.6°C)	(ASTM D-287) 0.8780
Flash Point	(ASTM D-92) 410°F
Pour Point	(ASTM D-97) -60°F
Viscosity @100°F @210°F	 SUS (ASTM D-445 & ASTM D-2161) 153 SUS (ASTM D-445 & ASTM D-2161) 47.3
Viscosity Index	(ASTM D-2270) 155
Rust Protection	(ASTM D-665 A & B) Pass
Foam Test	(ASTM D-892) Pass
Four-Ball Wear Test	(ASTM D-4172) (40kg, 1800RPM), 130°F, 1 hr) 0.66
Zinc %wt.	(XRF) .04

NOTE: Cold weather operation requires special oil considerations. Viscosity should not exceed 7500 SSU at lowest startup temperature. Continuous operation should range between 40-1000 SSU for all temperature ranges.

The following oils by brand name are approved for use in the hydraulic system on this equipment and considered to be all temperature hydraulic fluids.

- Pennzoil Pennzbell AWX MV32
- Mobil DTE 13M
- Shell Tellus T32
- Texaco Rando HDZ 32

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OIL CAN LUBRICANT RECOMMENDATION

Use only non-detergent engine oil to lubricate all moveable mechanical parts not furnished with grease fittings. Apply sufficient oil to give good lubrication, but do not bathe parts in oil. Always wipe off excess.

GREASE LUBRICANT RECOMMENDATION

Use a grease gun. Before engaging grease gun, clean the fitting. Always pump enough grease to purge the joint of contaminated grease and wipe off the excess.

WINCH GEAR OIL

Use AGMA Grade 5 EP (90wt.) for an 8,000 lb. winch and AGMA Grade 7 EP (140 wt.) for a 12,000 lb. winch.

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CHECK OIL LEVEL

Check the oil level every eight (8) hours.

Important: Contamination is a hydraulic system's worst enemy. **DO NOT** let dirt enter the system. Use a clean rag and remove dirt or other contamination around any system component before you disconnect or remove it. While you fill the reservoir, filter the oil through a 200 mesh (or finer) screen. **NEVER** use a cloth to filter the oil.

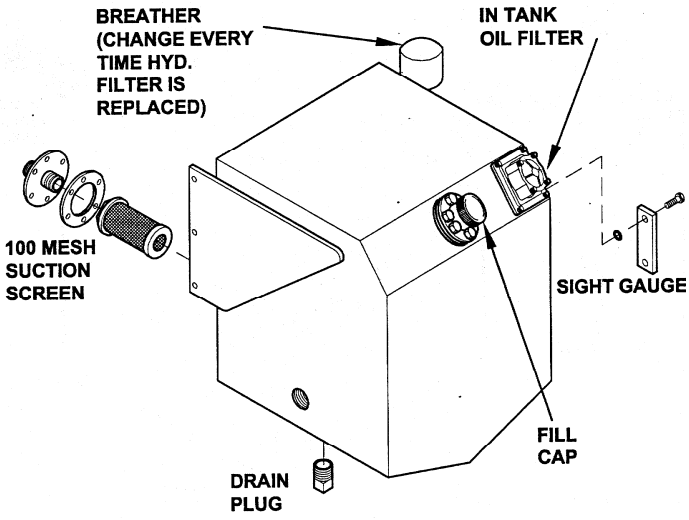
HYDRAULIC OIL TANK

Before checking the oil level, make sure the unit is in the following position:

- Truck – on level ground
- Tailgate and Body – fully down and locked.
- Packer Panel – in the in-transit position with all cylinders retracted.
- Lift Arm (if equipped) – is fully retracted.

The oil level in the standard tank must be kept between the low and full marks as indicated on the sight gauge.

The oil tank is mounted behind the chassis cab. Fill it to the level indicated on the sight gauge or between the two lines on the oil level decal.





Sight Gauge and
Oil Level Decal

CHANGE FILTER ELEMENT

Change the filter more often under certain conditions such as an extremely dusty atmosphere or area. Use only Heil replacement filters. Purchase the filter element from your local Heil distributor.

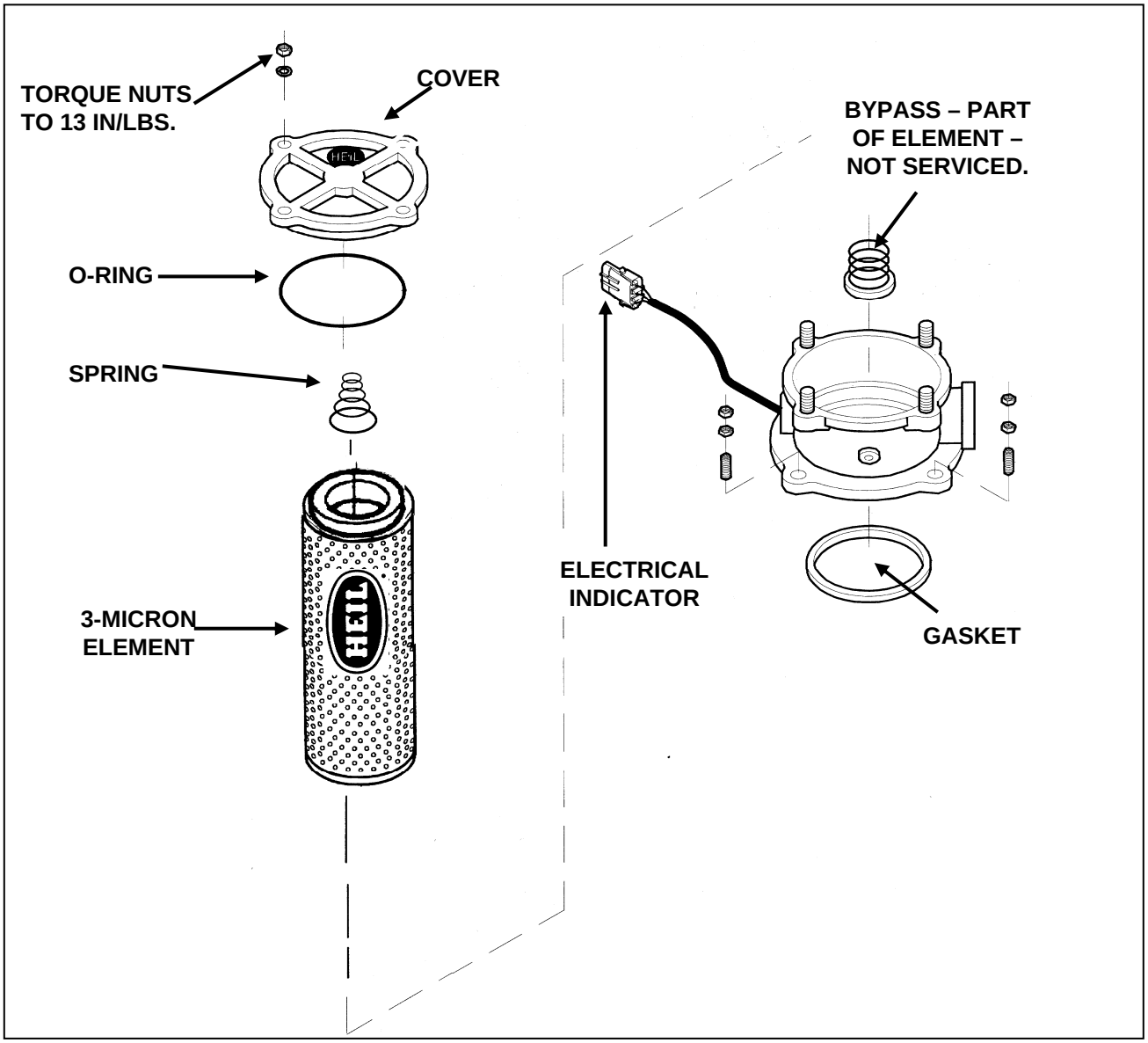
Change the filter element every 1000 hours or every six (6) months or when indicated by the filter monitor light located in the cab.

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CHANGE HYDRAULIC OIL FILTER

To change the hydraulic oil filter, follow these steps:

1. Remove nuts and filter cover.
2. Remove the filter element with the by-pass assembly and discard as required.
3. Clean the housing with a clean, lint-free cloth.
4. Check the o-ring and gasket. Replace them if necessary.
5. Lubricate all o-rings and gaskets.
6. Install new element.
7. Reinstall cover with nuts. Tighten nuts to 13 in/lbs.



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DRAIN AND CLEAN THE HYDRAULIC OIL TANK

Change the hydraulic oil at least annually or every 2000 hours of operating time, whichever comes first.

Remember that almost all hydraulic system malfunctions can be traced to dirt in the fluid. When working with the hydraulic system, the hands, tools, working area and parts must be as clean as possible.

⚠ CAUTION Wear proper eye protection when you are working on or around hydraulic lines or components. Wear proper eye protections and avoid contact with hydraulic oil if possible. Never check for oil leaks with your hands.

To drain and clean the hydraulic oil tank, follow these steps:

1. Disengage the pump, shut off the engine and remove the ignition key.
2. Perform the Lock Out/Tag Out procedure. (See Section 1)
3. Remove the fill cap from the top of the tank.
4. Remove the drain plug from the bottom of the tank so that the oil drains into a container.
5. While fluid is draining from the tank, remove and replace the filter/breather assembly. Change the assembly every time the in-tank filter is replaced.
6. To drain the entire hydraulic system, disconnect all hoses at the adapter and drain the hoses into a container.
7. Remove and replace the in-tank filter as described in Change Hydraulic Oil Filter on page 8.
8. Remove the outlet flange and 100 mesh suction strainer to gain access to the tank inside.
9. Remove sediment from the tank bottom.
10. Install the outlet flange with a new gasket and the 100 mesh suction strainer into the tank.
11. Install the drain plug in the tank bottom.
12. Reconnect and tighten all hose connections that were disconnected.
13. Fill tank with recommended oil, checking the sight gauge as you fill.

 NOTE: Before filling the tank be sure the funnel is clean and 200 mesh (or finer) screen is used to strain the hydraulic oil.
14. Check the entire system to make sure all connections are tight and no leaks are found.
15. Start the truck's engine and engage the pump.

⚠ WARNING Moving equipment can be dangerous to bystanders. Serious injury or death can occur if a person is in the wrong area or is not attentive to the operations. Clear the area of all unnecessary people before you operate the controls.

16. Operate the packing panel through 10 cycles to be sure all air is out of the circuits.
17. Operate the automated container lift mechanism.
18. Operate tailgate – full up and full down.
19. Operate body raise (dump units) – full up and full down.
20. With the packing panel in the retracted position and lift in the in-transit position, check tank oil level. If necessary, add recommended as described under "Hydraulic Oil Tank".

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PURGE HYDRAULIC SYSTEM

If the hydraulic system becomes contaminated because of component failure or some other reason, you must purge the hydraulic system. To purge the system, follow these steps:

CAUTION **Wear proper eye protection when you are working on or around hydraulic lines or components. Wear proper eye protections and avoid contact with hydraulic oil if possible. Never check for oil leaks with your hands.**

1. Extend the packer/ejector cylinder to lower the oil level in the tank.
2. Remove and replace the in-tank oil filter element in the tank.
3. Engage the packer/ejector control lever and allow the oil to circulate through the new filter, cleaning the oil.

 NOTE: Before filling the tank be sure the funnel is clean and 200 mesh (or finer) screen is used to strain the hydraulic oil.
4. Repeat the procedure as necessary until the system is purged.

If contaminated hydraulic oil reaches the cylinders, the unit can need to be removed from service until the contamination is removed. For more information, contact the Heil field service department.

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&
INQUIRES

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CUSTOMER SUPPORT
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WARRANTY CLAIMS

866-ASK-HEIL

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STANDARD TORQUE DATA FOR NUTS AND BOLTS

The following recommended torque data is for use as a general guideline.

NOTE: Torque specifications on a drawing override torque values in the table below.

Recommended torque, in foot pounds, for all Standard Application nuts and bolts provided:

- All thread surfaces are clean and lubricated with SAE-30 engine oil. (See note.)
- Joints are rigid, that is no gaskets or compressible materials are used.
- When re-using nuts or bolts use minimum torque values.

NOTE: Multiply the standard torque by:

- .65 when finished jam nuts are used.
- .70 when Molykote, white lead or similar mixtures are use as lubricants.
- .75 when parkerized bolts or nuts are used.
- .85 when cadmium plated bolts or nuts and zinc bolts w/waxed zinc nuts are used.
- .90 when hardened surfaces are used under the nut or bolt head.

Bolt or Stud	Type 1 Studs Only		Type 1 Bolts 6" or less		Type 1 Bolts Longer than 6"		Type 5 All Lengths		Type 8 All Lengths			
									Only when used in cast (gray) iron*		All other applications	
Diameter	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
1/4	5	6	5	6	3	3	9	10	11	13	12	14
5/16	12	13	12	13	6	7	19	21	24	27	27	30
3/8	21	24	21	24	11	13	33	37	43	47	45	50
7/16	35	38	35	38	19	21	53	60	69	76	75	85
1/2	52	28	52	58	29	32	80	90	104	117	115	130
9/16	70	80	70	80	41	46	115	130	150	170	165	185
5/8	98	110	98	110	57	63	160	180	210	230	220	250
3/4	174	195	174	195	100	112	290	320	350	390	400	450
7/8	300	330	162	181	162	181	420	470	570	630	650	730
1	420	470	250	270	250	270	630	710	350	950	970	1090
1 1/8	600	660	350	380	350	380	850	950	1200	1350	1380	1550
1 1/4	840	940	490	540	490	540	1200	1350	1700	1900	1940	2180
1 3/8	1100	1230	640	710	640	710	1570	1760	2300	2500	2600	2800
1 1/2	1470	1640	850	940	850	940	2000	2300	3000	3300	3300	3700
1 3/4	2350	2450	1330	1490	1330	1490	3300	3700	4700	5200	5300	6000
2	3500	3900	2000	2200	2000	2200	5000	55000	7000	7800	8000	9000

*When bolt penetration is 1 1/2 times the diameter of the bolt.

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BOLT TYPE IDENTIFICATION CHART

IH Type	S.A.E. Grade	Description	Bolt Head Marking**
1	1 or 2	No radial lines. Low or medium carbon steel not heat treated. NOT USED, replace with same grade bolt.	
5	5	Three radial lines. Quenched and tempered medium carbon steel.	
8	8	Six radial lines. Quenched and tempered special carbon or alloy steel	

COLD WEATHER WARM UP PROCEDURE

When air temperatures are cold, it can be necessary to warm up the unit's hydraulic oil before you start your daily route operation. Follow these steps:

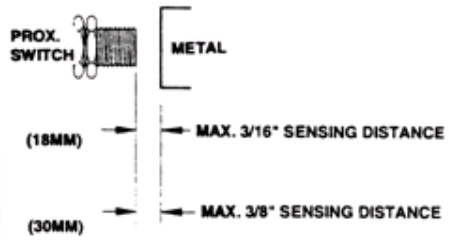
1. Start the truck and let the engine idle.
2. **APPLY** the parking brake and make sure it holds.
3. Engage the hydraulic pump for approximately five minutes.

WARNING **Moving parts on the unit are dangerous. Serious injury or death can occur if a person is struck by the equipment. Clear all people of the area before you operate the unit**

4. **MAKE SURE** the area around the unit is clear of all people before you operate the controls.
5. Operate the lift and body hydraulic functions through 10 (ten) cycles while the engine idles. This warms the hydraulic oil.
6. Check for fluid leaks again. Repair if necessary.
7. The unit is now ready to go on route.

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PROXIMITY SWITCH TROUBLESHOOTING

Problem	Probable Cause	Remedy
Switch Failure	Loose or corroded electrical connections.	Replace the electrical connections.
	Damaged Switch A. Cracked Ferrite core causing the fine internal wire to break. B. Cracked Ferrite core – but wire is not broken – the sensitivity of switch will increase which causes sensing distance to increase or switch ISSUED DECEMBER work intermittently as the temperature changes.	1. DO NOT strike switch to make it work. 2. When adjusting the switch, take care not to damage the switch. 3. DO NOT adjust switch too close to the metal it is sensing.
	Voltage spikes from truck chassis electrical system will breakdown the internal electronics of the proximity switch.	1. A clean power source from the chassis manufacturer. 2. The body electrical systems is protected from voltage spikes. **NOTE:** Heil proximity switches have a Light Emitting Diode (LED) on the switch to indicate that the switch is sensing metal. The light changes color when the switch senses metal. **Green** indicates the light is ON. **Yellow** indicates the switch senses metal.
	Improper Sensing Range	Adjust proximity switches to sense metal as follows: 

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All Units

Problem	Probable Cause	Remedy
	If proximity switch LED light is NOT ON.	1. Unplug proximity switch*. 2. Check the signal wire (terminal A) by grounding it to the body. The PLC light (in cab) will come on if the signal is working. 3. Check the ground wire by jumping it and the signal (A and B). 4. Check the Hot wire (terminal C) with a test light. 5. If all three (3) wires are good, replace the proximity switch. *If the PLC light stays on when a switch is uplugged, the signal wire is shorted to ground.

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BATTERY DISCONNECT SWITCH

The figure below shows the location of a typical battery disconnect switch on the battery box. The battery box can look different and can be at a different location on different chassis. Become familiar with the location of the battery box and battery disconnect switch on your unit.

WARNING **The battery disconnect switch must be turned off whenever the vehicle is not in service and/or to be left unattended.**

Battery cables must be securely anchored and not rubbing other equipment. Cable insulation must be fee of damage and abrasion. Inspect weekly.



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DECAL CARE

It is important that the decals are properly cleaned to make sure that they are readable and do not come off the unit. Use the following steps to clean the decals.

GENERAL INSTRUCTIONS

Following these instructions helps the decals adhere longer.

- Wash the decals with a blend of mild car wash detergent and clean water.
- Rinse with clean water.
- Let the vehicle air-dry or dry with a micro-fiber cloth.
- Do not allow fuels to stay in contact with the decal for an extended period of time. Remove the fuel contamination as quickly as possible.
- Do not use carnauba-based wax over the decals.
- Do not use a mechanical brush while washing the decals.

PRESSURE WASHER PRECAUTIONS

Pressure washing can cause damage to decals. It can cause the edges of the decals to lift and peel the decal away from the unit. Over time, the decal can fade, crack or chip away.

Use pressure washing only when other cleaning methods are not effective. If you use a pressure washer, use the following precautions.

- Spray nozzle opening: 40° wide pattern
- Spray angle: 65° from vehicle' s body
- Distance of nozzle to decal: 15" minimum
- Water pressure: <= 800 psi
- Length of time: not more than 30 sec.
- Do not use sharp angles to clean the decals – this can lift the decals from the unit.
- NEVER use a "turbo pressure nozzle".

REMOVE DIFFICULT DEBRIS

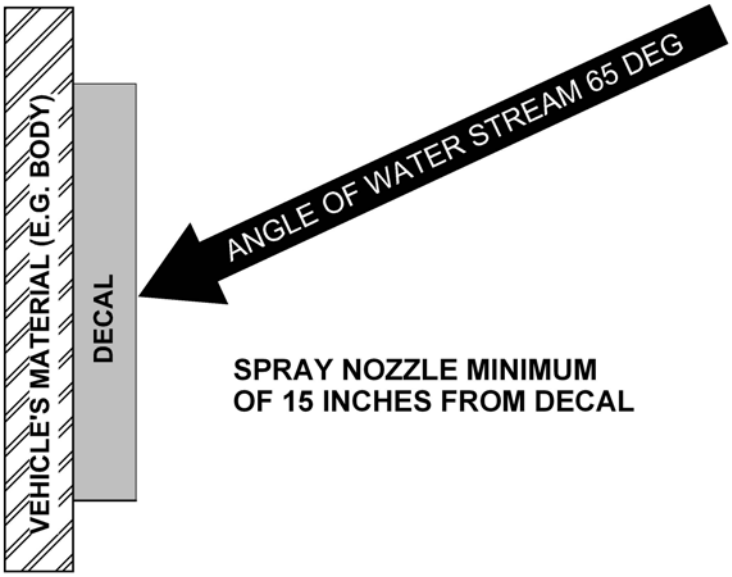
When normal cleaning procedures do not remove difficult debris from the decals, try the following:

WARNING **Isopropyl alcohol is flammable and is harmful to eyes and skin. Keep isopropyl alcohol away from heat or open sources of ignition. Flush eyes and skin with water for 15 minutes after contact. Seek immediate medical help.**

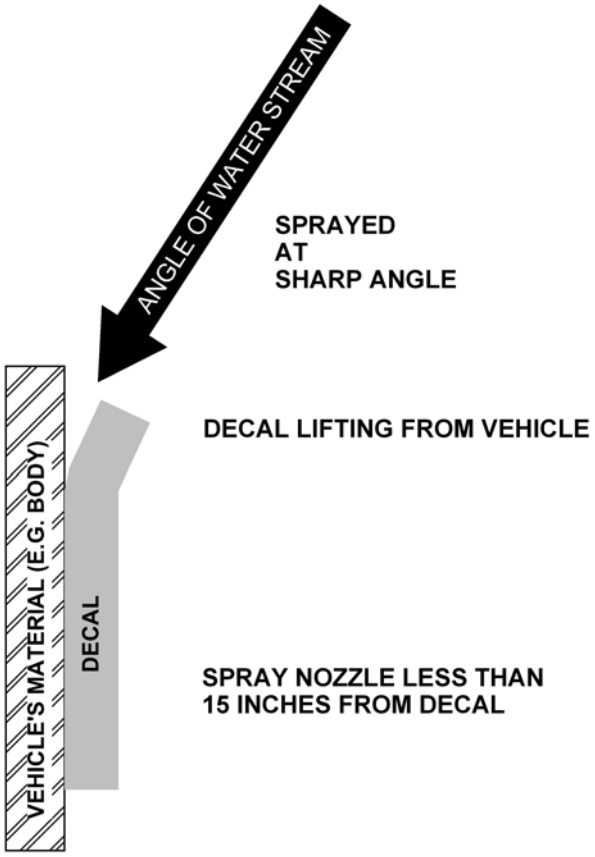
- Spot clean the decal with Isopropyl Alcohol and a micro-fiber cloth (rag).
- If these methods do not work on a problem area, call a Heil Dealer or Heil Customer Support.

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All Units



RECOMMENDED TECHNIQUE



INCORRECT TECHNIQUE

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Rapid Rail® Lift Arm



SERVICE MANUAL

SECTION 2
LIFT ARM

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SMS2-SWS-706177-0110

Customer Support

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SPECIFICATIONS

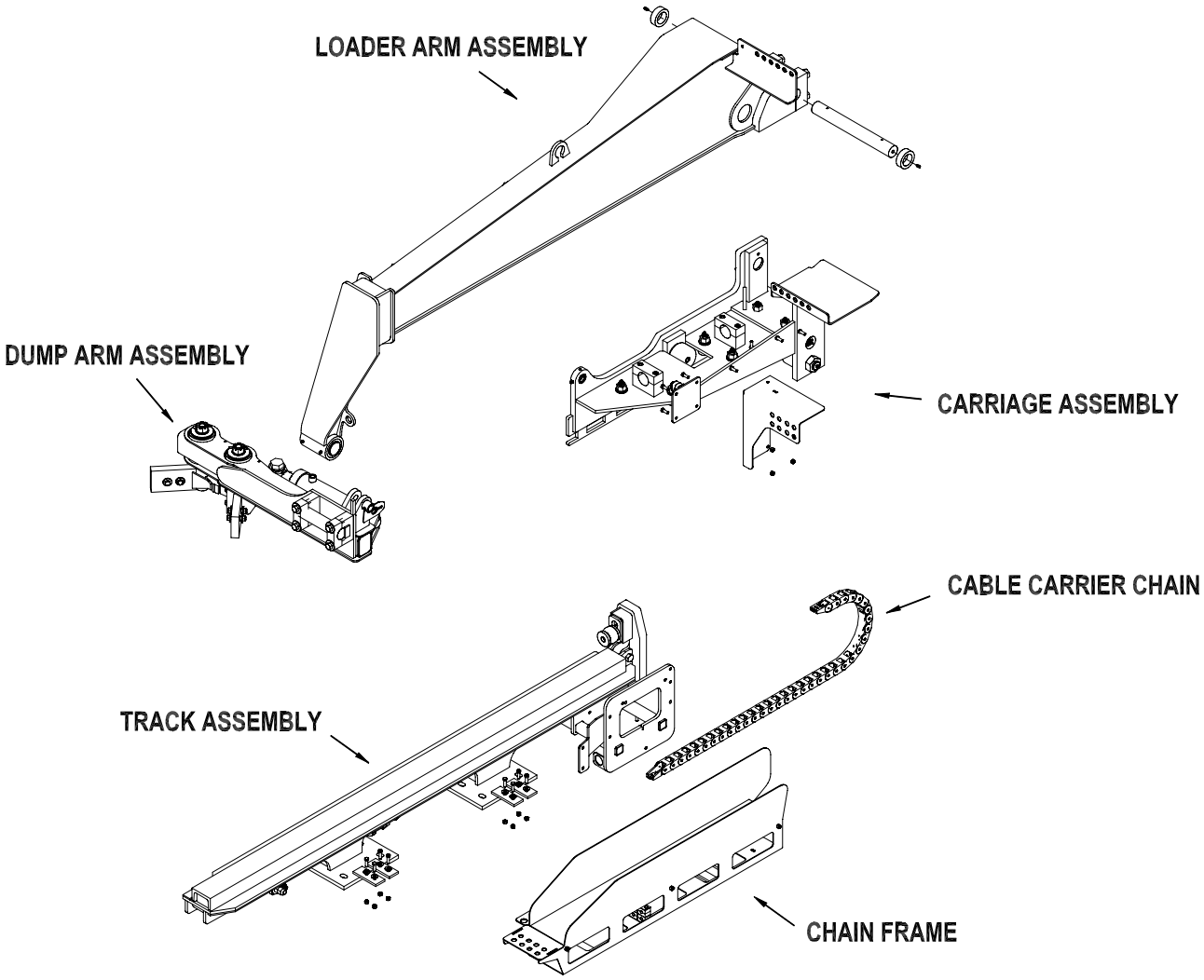
Cylinders;
- In-Out 1.75" Bore x 72" Stroke
- Grabber 2.5" Bore x 8" Stroke
- Lift Arm 3" Bore x 16" Stroke
- Dump 3" Bore x 8" Stroke

Valve Pressure Settings;
- Loader Main System 2200 PSI
- Loader In/Out Cross-port Relief 2350 PSI
- Release 1100 PSI

Cycle Times;
- Loader Cycle 7-9 seconds

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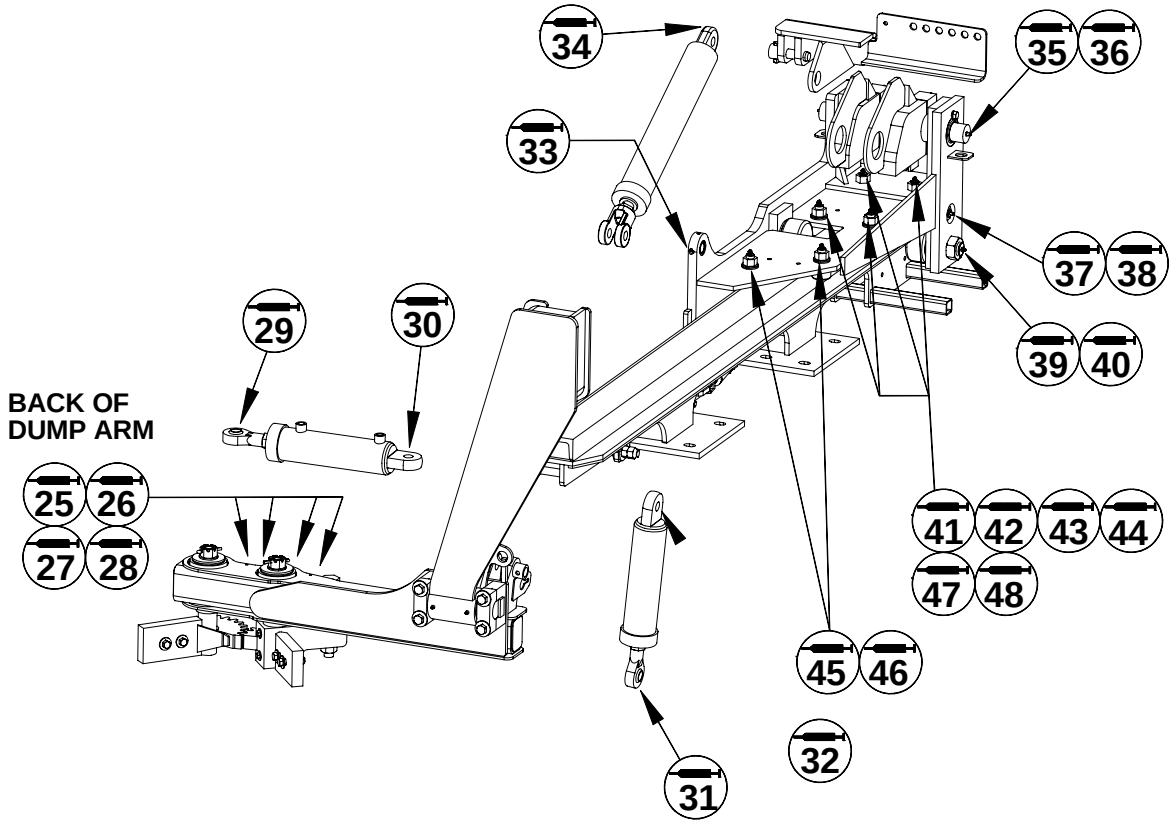
LOADER NOMENCLATURE



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GREASE FITTING LOCATIONS

Note:
Clean fittings before applying grease and always pump enough grease into joint to remove the old grease. Wipe off excess.



ZERKS 25 THROUGH 48
LUBE TWICE WEEKLY/20 HRS.

THERE ARE A TOTAL OF 14 ZERKS ON CARRIAGE ASSEMBLY

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CRITICAL INFORMATION: It is critical that you routinely check the torque of the following roller bearings on the loader's carriage assembly. The life expectancy of each of these bearings is dependent upon tightening these bearings to the following torque requirements during installation of new bearings AND routinely maintaining these torque requirements. The bearings are the 2" and 4" cam followers (bearings). See the Parts Manual, page 2.20 for the locations of these bearings.

If the torque is less than specified, the life of the bearing is much shorter. If the torque is greater than specified, the bearings will freeze and fail very rapidly.

The 12 bearings are:

Item 2, Part Number 003-4449, 4" cam follower, quantity 2

and

Item 3, Part Number 003-4450, 2" cam follower, quantity 10.

Each Item 2 has a grease fitting, Item 12.

Each Item 3 has a grease fitting. Seven of the grease fittings are Item 14 (90° grease fittings) and three are Item 13 (straight grease fittings).

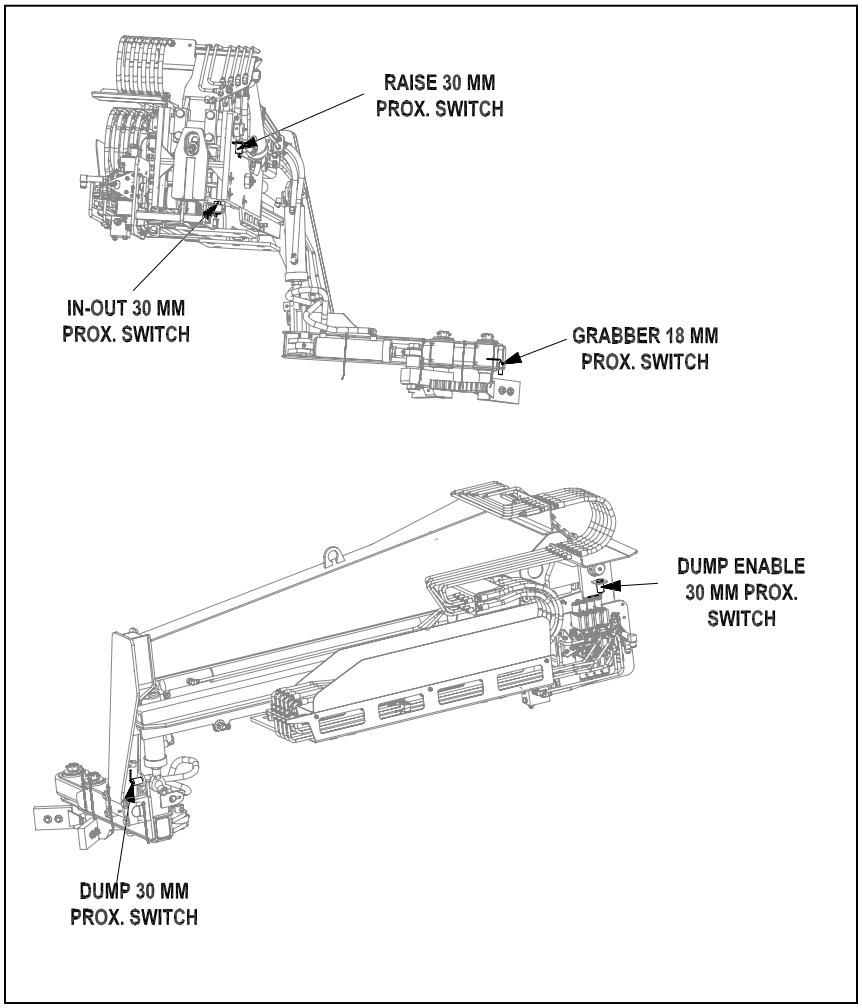
The **DRY** torque requirements for these bearings are:

Item 2, 4" cam follower, 500 ft-lbs (again, dry)
Item 3, 2" cam follower, 150 ft-lbs (again, dry).

Check the torque of these bearings every six (6) months or 1,000 hours.

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LOADER PROXIMITY SWITCHES



The loader has 5 sourcing proximity switches, four 30mm and one 18mm. They are adjusted properly when the gap between the switch and sensing target is 3/32".

Before adjusting any switch, make sure the unit is in the lock-out position.

LOCK-OUT position is defined as follows:

1. Engine stopped and ignition key removed from cab.

2. Set the brakes and make sure they are holding.

3. Chock all wheels.

4. Insert a LOCK-OUT tag on the steering wheel.

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1. The **IN-PROXIMITY SWITCH (N. O.)** is located on the street side of the unit, on the backside of the loader carriage. The sensing striker for the switch is welded on the street side of the loader track assembly. This switch is used to stop the In/Out cylinder when the arm is retracting before the cylinder is fully collapsed. It is activated when the gap between the striker and switch is 3/32", and stops the movement of the arm by interrupting power to the IN solenoid mounted on the loader valve.
If the switch does not operate properly, the loader will not lift a container through a complete cycle in the coordinated mode. To adjust the switch, first verify the striker is parallel to the cylinder rod. If the striker is okay, adjust the gap between striker and switch until the loader arm retracts to the fully IN position without stopping other loader functions.

2. The **COORDINATED IN PROXIMITY SWITCH (used on STARR only) (N. O.)** is located on the street side of the unit, on the backside of the loader carriage, below the IN PROXIMITY SWITCH. This switch is used to stop the IN/OUT cylinder when the arm is retracting before the dump arm contacts the hopper in the coordinated mode. It is activated by the switch sensing the striker. The striker triggers the switch, stopping the movement of the arm by interrupting power to the IN solenoid mounted on the loader valve. If the COORDINATED IN LIMIT SWITCH is not correctly gap set or is not operating properly, the loader will travel in too far and the dump arm will contact the hopper. To adjust the switch, first verify the striker is parallel to the cylinder rod. If the striker is okay, move switch to the correct gap setting (3/32") until the loader stops before the dump arm contacts the hopper in the coordinated mode.

3. The **UP PROXIMITY SWITCH (N. O.)** is located on the front street side of the loader carriage assembly. The striker cam for the switch is located on the front street side of the loader carriage mounted on the lift arm pivot pin. This switch is used to limit how far the dump arm raises by interrupting the power to the UP solenoid mounted on the loader valve. This switch is adjusted by setting the correct gap turning the striker cam on the lift arm pivot pin and must be set to activate the switch just before the lift cylinder reaches the end of its UP stroke. Always mark the cam and pin to reference their old position before making any adjustment. If this switch doesn't have the right gap with the striker cam, the main relief valve could open causing erratic dumping arm motion in the coordinated mode or the container may dump outside the hopper.

4. The **UNDUMP PROXIMITY SWITCH (N. O.)** is located on the bottom of the loader dump arm assembly on the curb side of the unit. It is activated by sensing the striker ear on the cab side of the dump cylinder rod eye. The switch is used to stop the retraction of the dump cylinder by interrupting the power circuit to the UNDUMP solenoid, mounted on the loader valve. This switch is adjusted by moving the switch to the correct gap setting so switch is activated when the grippers are parallel to the ground.
If the gap between switch and striker is not correct and doesn't shut off the UNDUMP solenoid, the loader will not travel all the way in during the next cycle in the coordinated mode.

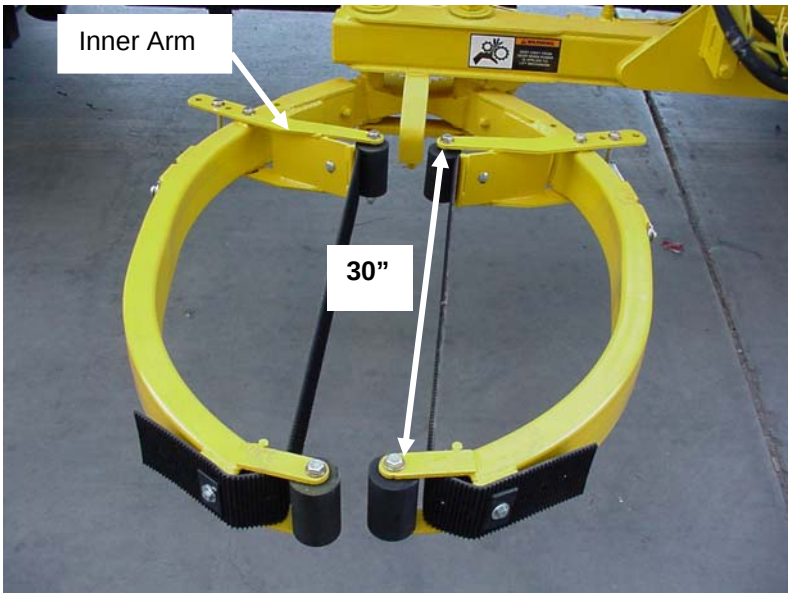
5. The **DUMP ENABLE LIMIT SWITCH (N.O.)** is located on the rear street side of the loader carriage assembly with the striker cam located on the rear street side of the lift arm pivot pin. This limit switch enables the dumping motion of the gripper arm in the coordinated mode by completing the power circuit to the DUMP solenoid mounted on the 4-stack valve. This switch is adjusted by loosing the set screws and turning the striker cam on the lift arm pivot pin and must be set to activate the switch to begin the dump cylinder motion when the loader arm is two-thirds of the way up. Always mark the cam and pin to reference their old position before making any adjustment.
If the switch does not make any contact with the striker cam or not working correctly, the loader arm will come in and up, but will not dump in the coordinated mode. If the switch is making contact too early, the container may miss the hopper or it will not raise to the full height above the hopper. If the switch makes contact with the striker too late, it will not begin to dump the container until the arm is fully raised above the hopper.

6. The **GRABBER/JOYSTICK INTERLOCK PROXIMITY SWITCH (N.O.)** is located on the cab side of the loader dump arm. This switch interrupts the release circuit to prevent the grippers from opening if the joystick is placed in the gripper release position. This is an 18mm switch.
This switch should be adjusted to prevent the grippers from releasing a container when the lift arm is more than 40 inches above the ground.

NOTE: 30mm Proximity Switch part no. is 063-0109, 18mm switch is part no. 063-0108.

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Universal Belt and Tri-cuff Grabber Adjustments



60 – 90 Gallon Belt Grabbers – top left photo

Adjust the grabber belt length so the distance between the roller on the inner arm and the outside roller is 30” (+ or – 1”).

Note: The grabber belt holes on the inside end of the belt are farther apart to make longer adjustments. The holes on the outside end of the belt are closer together to make shorter adjustments.

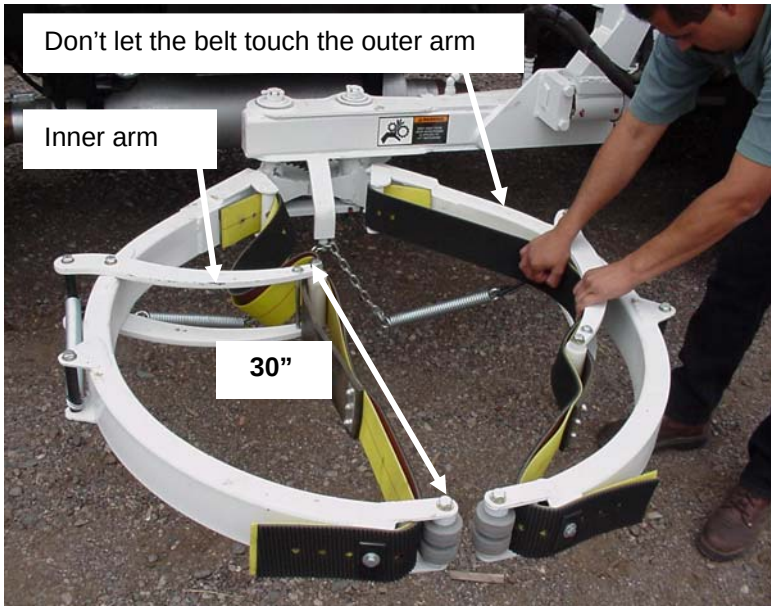
Note: When used with the Python lift the grabbers should be adjusted so the outer rollers do not touch each other when the grabbers are completely closed.

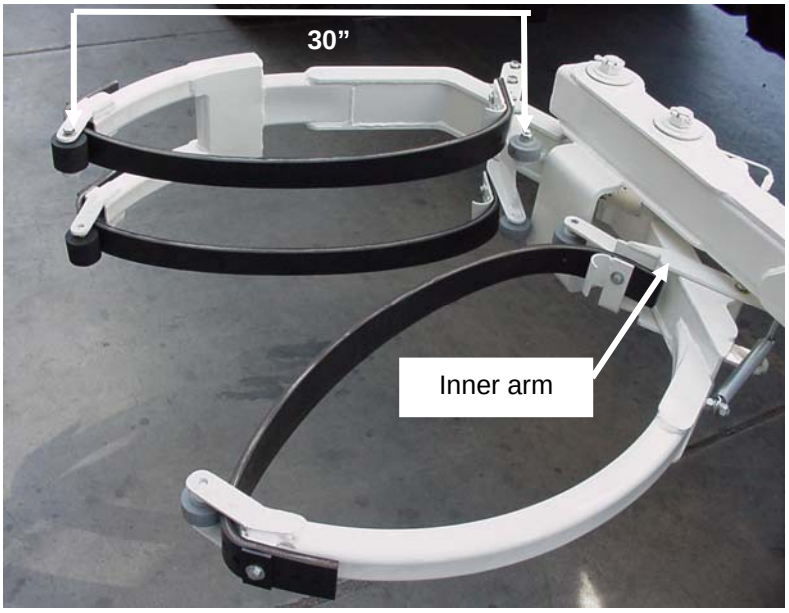
90 – 300 Gallon Belt Grabbers - center photo

Adjust the grabber belt length so the distance between the inner arm and the outside roller is approximately 30” (+ or – 1”) to obtain a firm grip for smaller containers. The total overall length of the grabber belt must be set to obtain a firm grip for larger containers.

Note: Do not adjust the total overall belt length too far as this may cause the grabber belt to touch or wear against the outer arm.

Note: When used with the Python lift the grabbers should be adjusted so the outer rollers do not touch each other when the grabbers are completely closed.





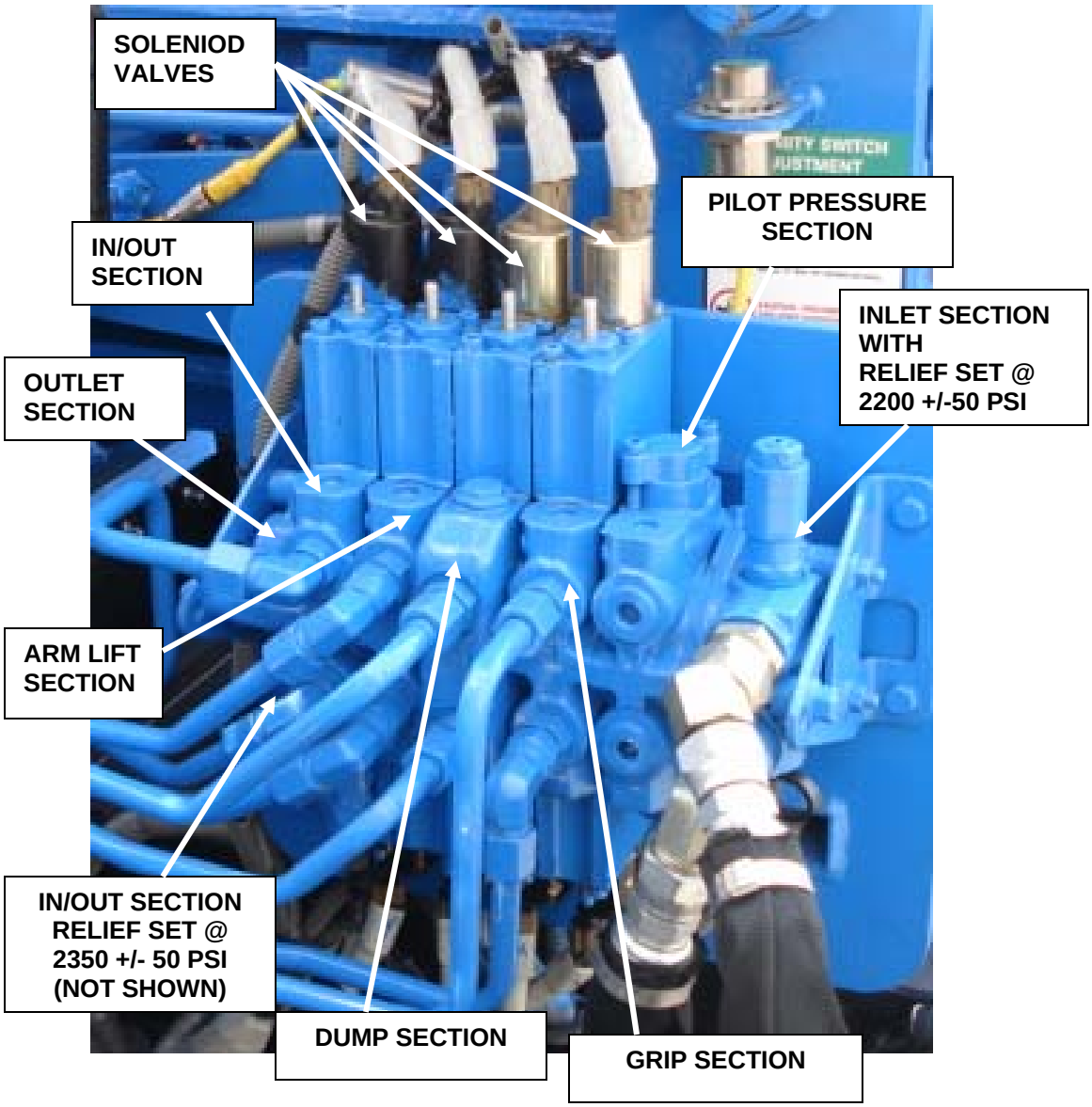
Used on 30 to 110 Gallon
Tri Cuff Belt Grabbers- bottom left photo

Adjust the grabber belt length so the distance between the roller on the inner arm and the outside roller is 30” (+ or – 1”).

Note: The grabber belt holes on the inside end of the belt are farther apart to make longer adjustments. The holes on the outside end of the belt are closer together to make shorter adjustments.

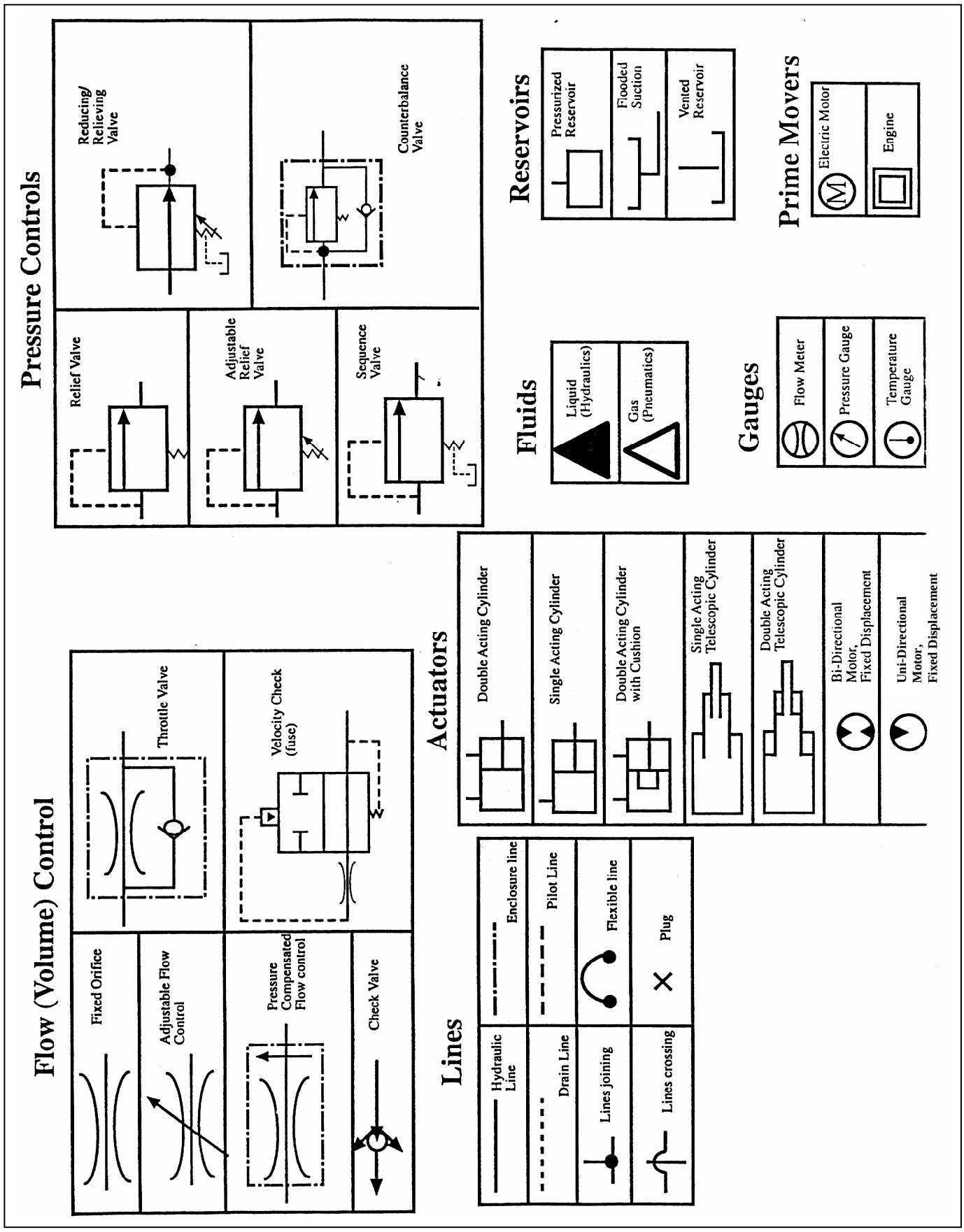
LOADER CONTROL VALVE

A sectioned control valve for the loader (shown below) shows the different functions and relief valves.

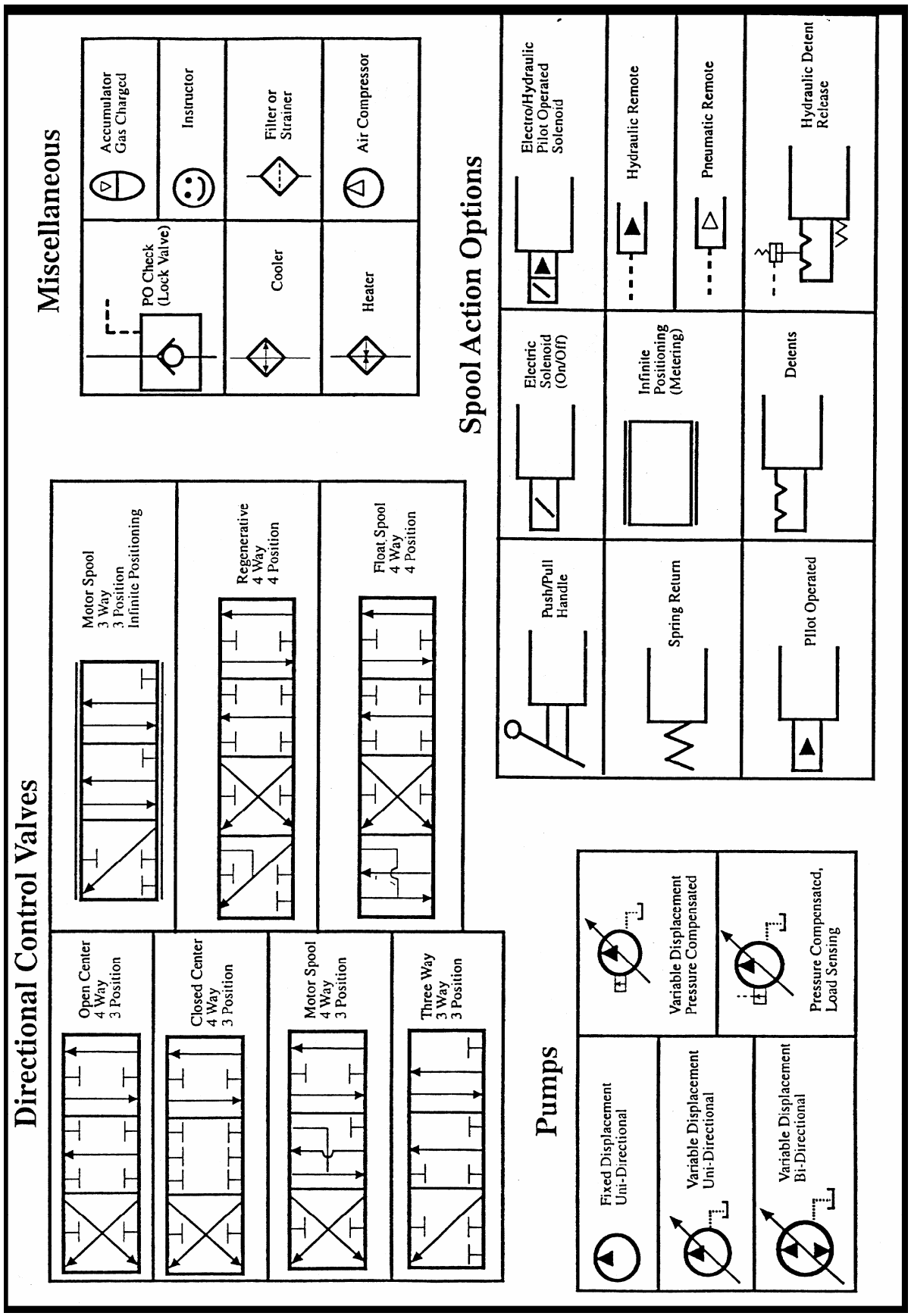


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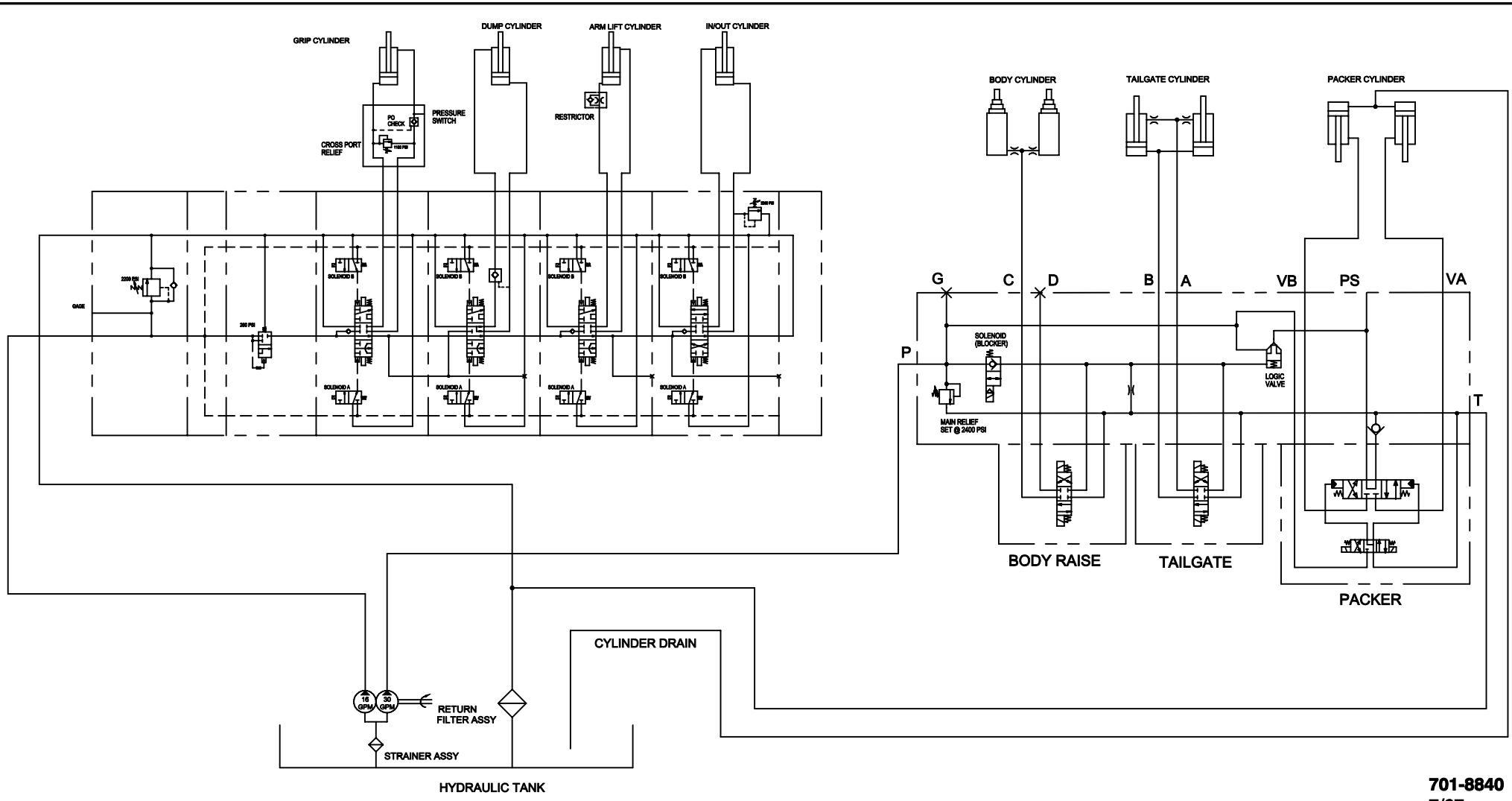
HYDRAULIC SYMBOLS

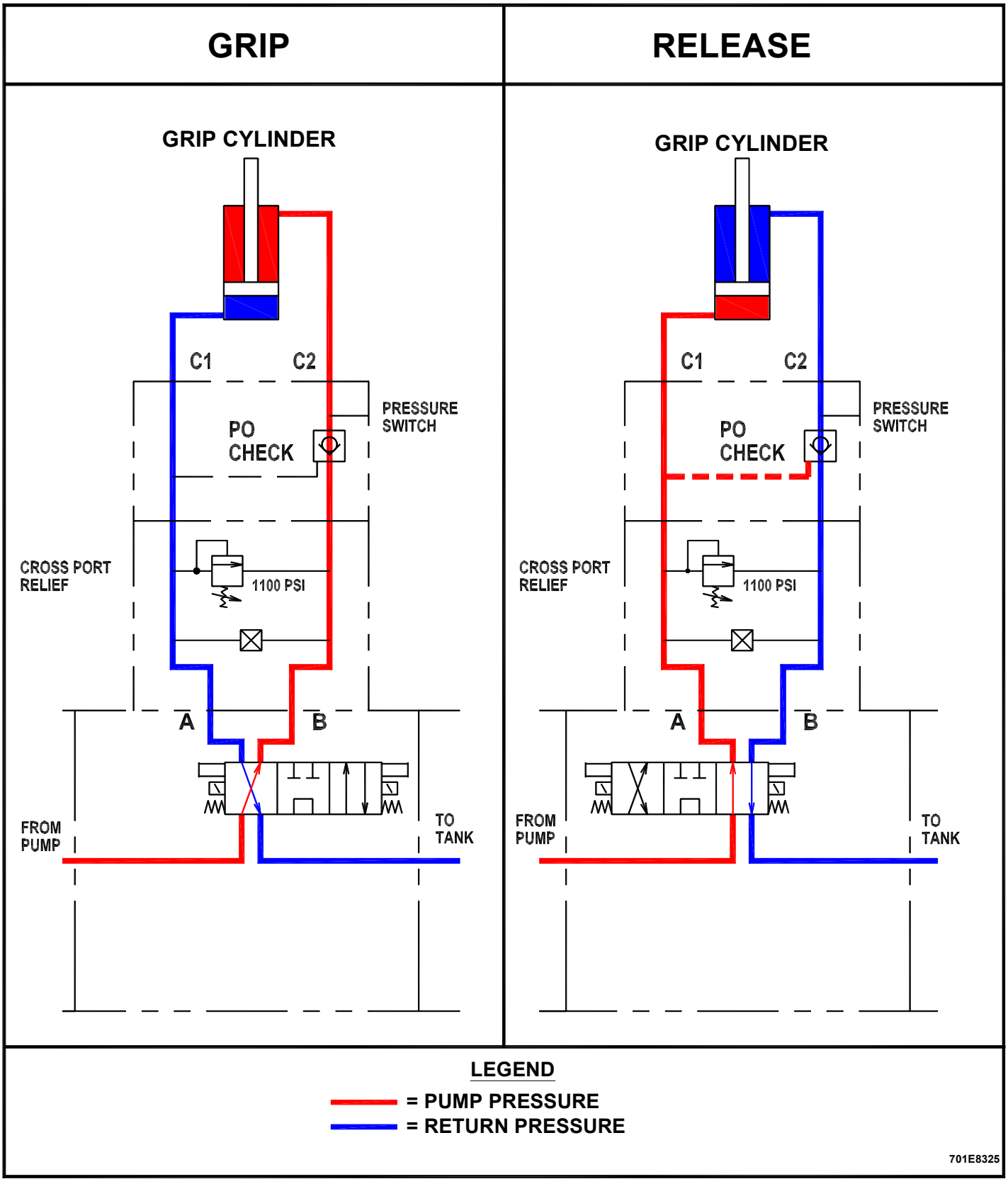


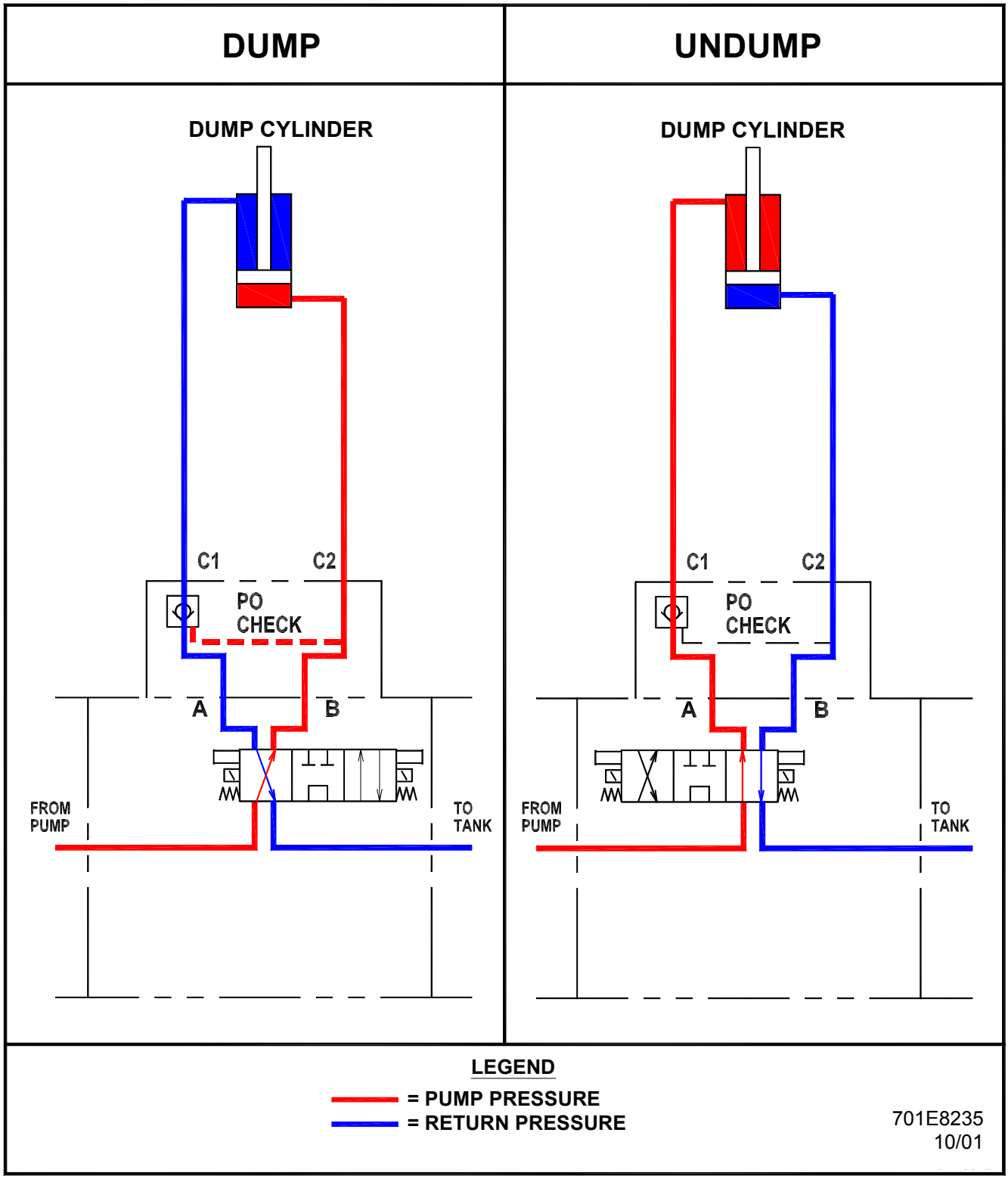
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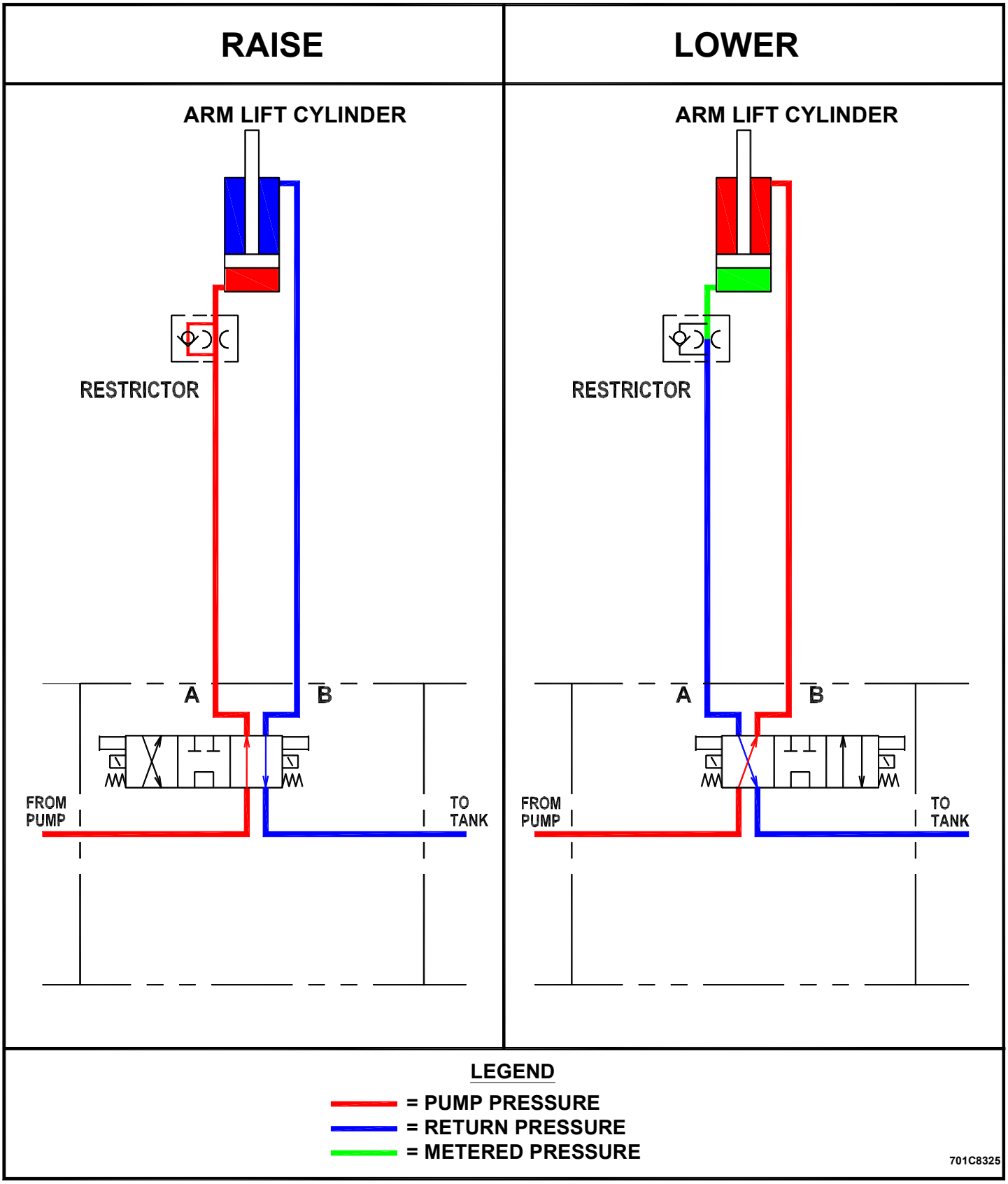
HYDRAULIC SCHEMATIC

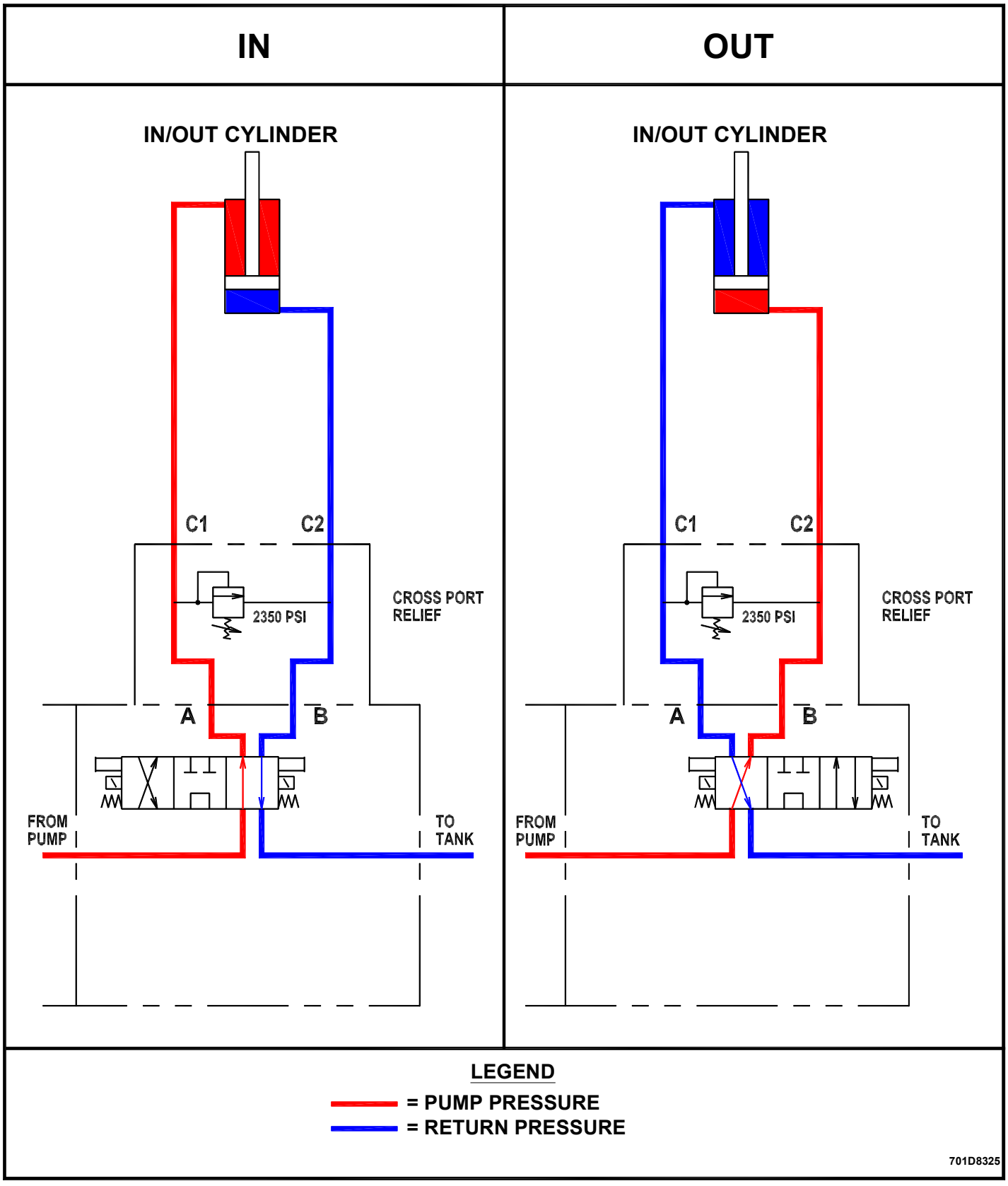



GRIP
RELEASE
GRIP CYLINDER
C1
C2
PRESSURE SWITCH
PO CHECK
CROSS PORT RELIEF
1100 PSI
A
B
FROM PUMP
TO TANK
GRIP CYLINDER
C1
C2
PRESSURE SWITCH
PO CHECK
CROSS PORT RELIEF
1100 PSI
A
B
FROM PUMP
TO TANK
LEGEND
= PUMP PRESSURE
= RETURN PRESSURE
701E8325

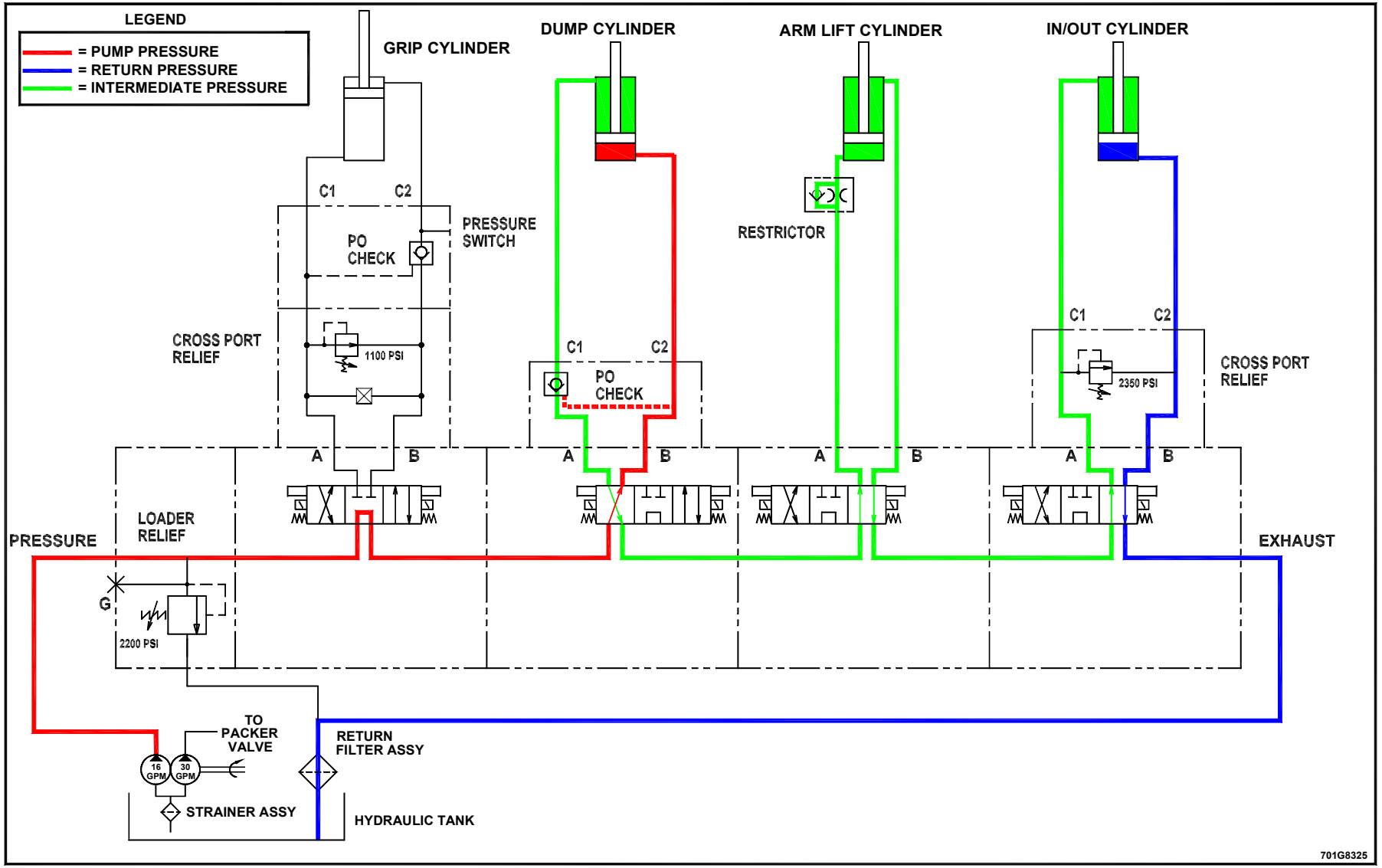


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10/01

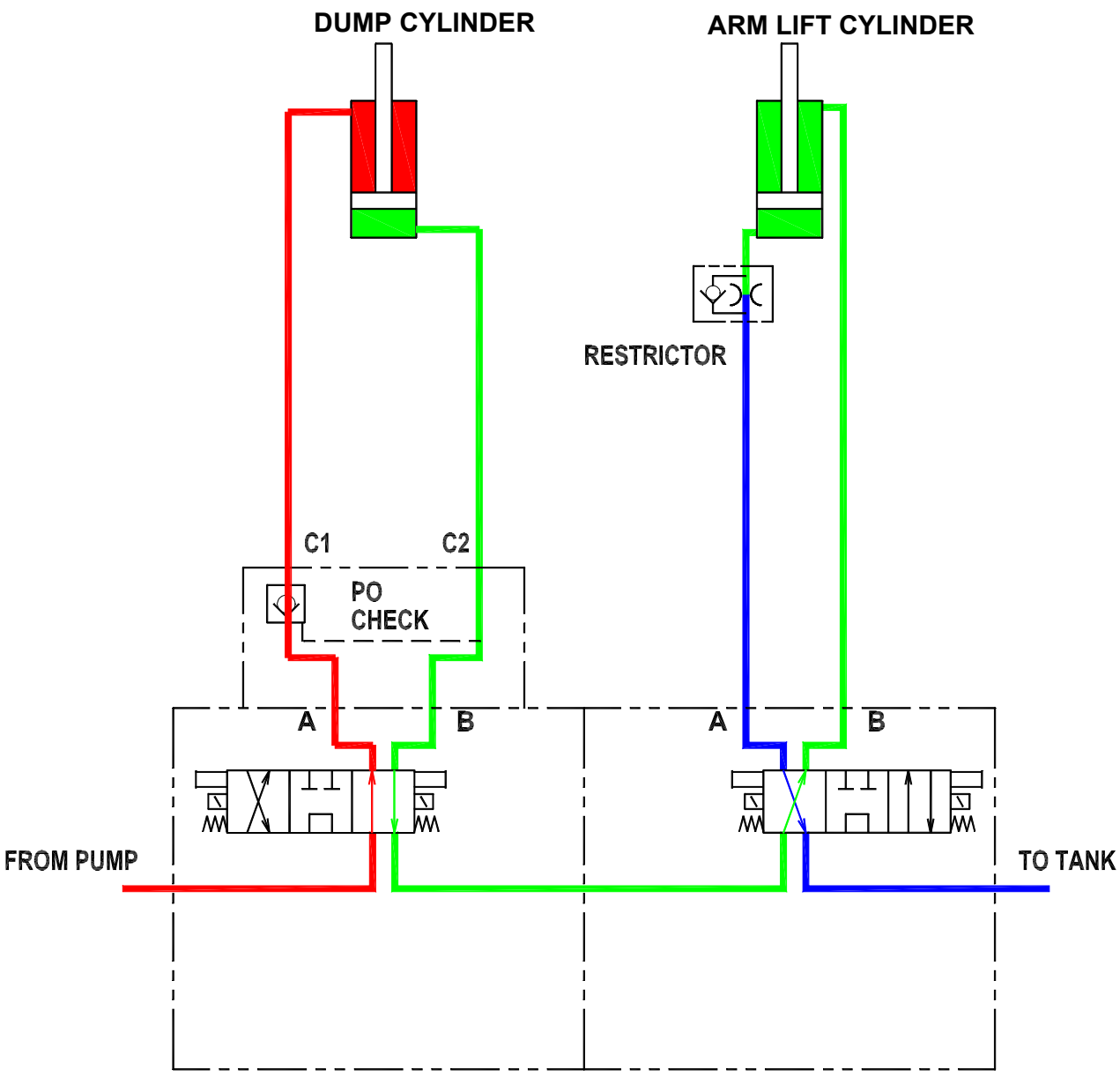

RAISE
LOWER
ARM LIFT CYLINDER
RESTRICTOR
A
B
FROM PUMP
TO TANK
ARM LIFT CYLINDER
RESTRICTOR
A
B
FROM PUMP
TO TANK
LEGEND
= PUMP PRESSURE
= RETURN PRESSURE
= METERED PRESSURE
701C8325


IN
OUT
IN/OUT CYLINDER
IN/OUT CYLINDER
C1
C2
C1
C2
2350 PSI
2350 PSI
CROSS PORT RELIEF
CROSS PORT RELIEF
A
B
A
B
FROM PUMP
TO TANK
FROM PUMP
TO TANK
LEGEND
= PUMP PRESSURE
= RETURN PRESSURE
701D8325

COORDINATED DUMP UP & IN



COORDINATED (UNDUMP & DOWN)

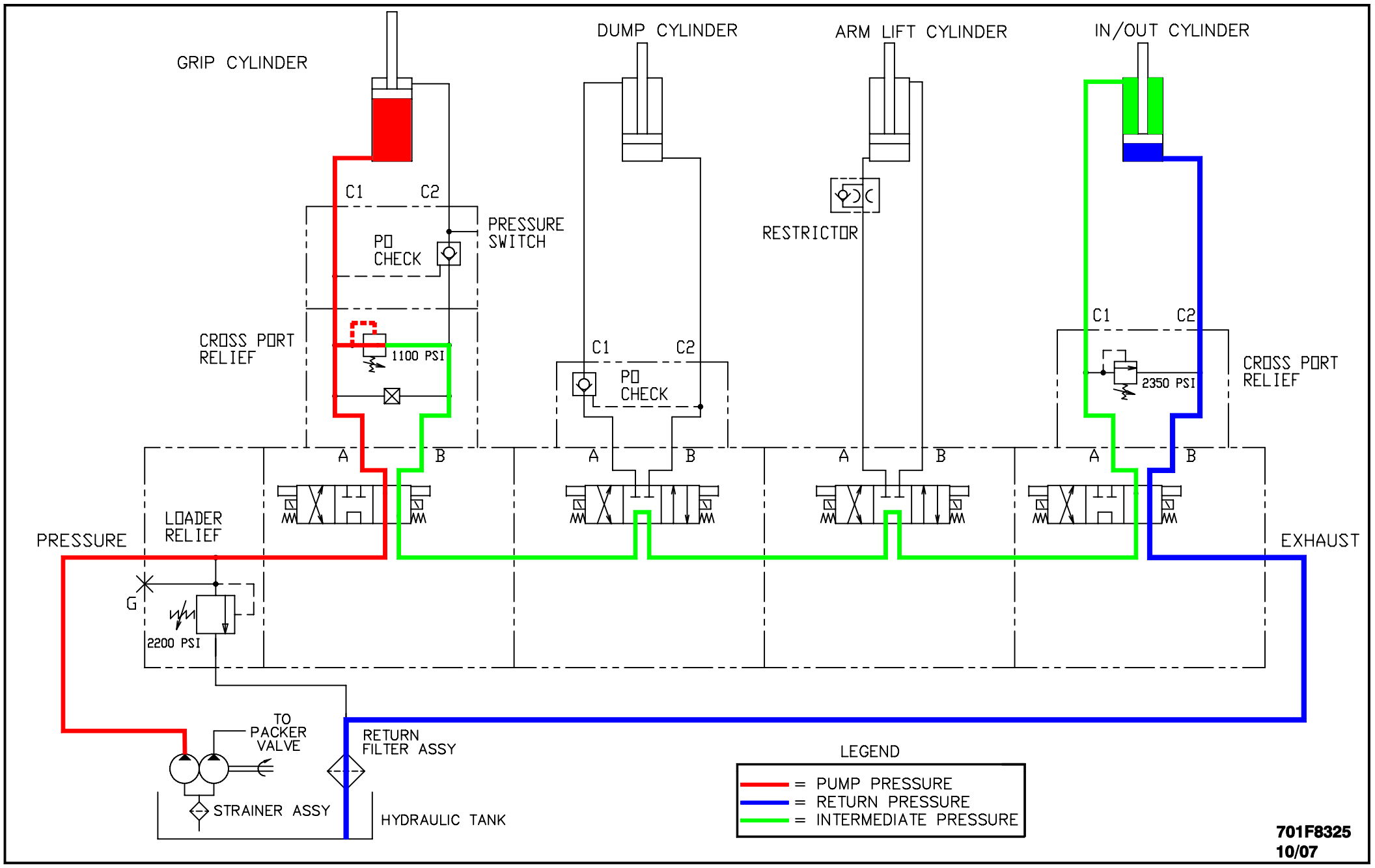


LEGEND

= PUMP PRESSURE
= RETURN PRESSURE
= METERED PRESSURE

701K8325
10/01

COORDINATED RELEASE & IN



701F8325
10/07

All Units



SERVICE MANUAL

SECTION 3
PUMPS

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All Units

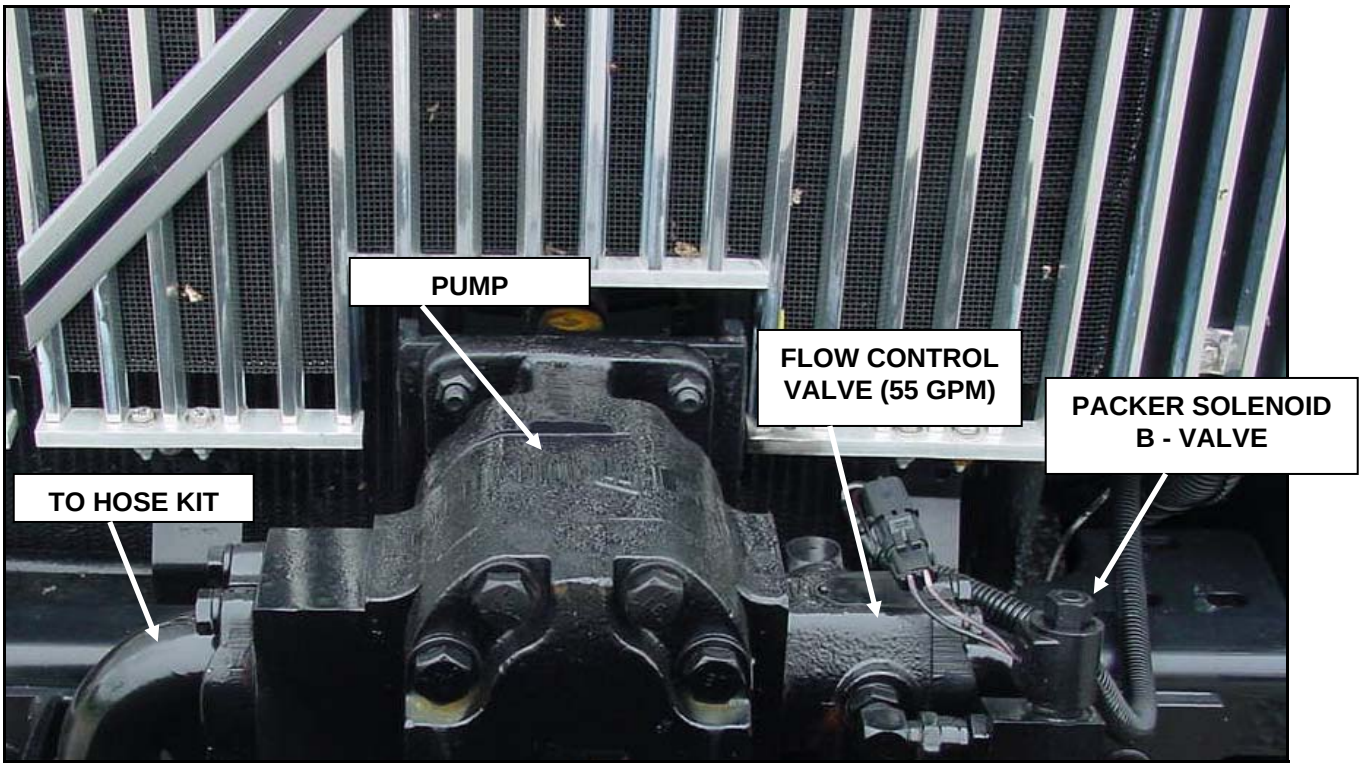
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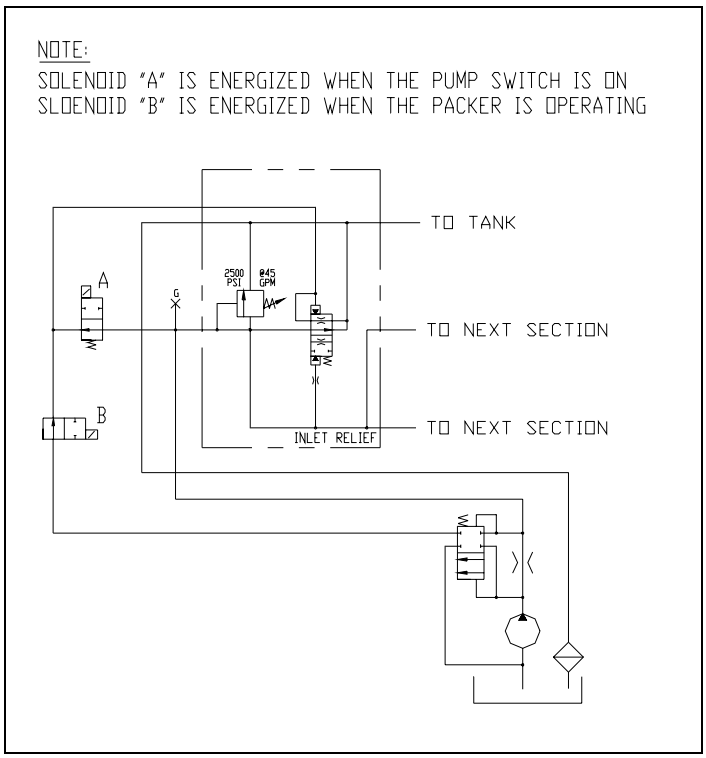
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COMMERCIAL FRONT MOUNT (HOC) FOR PYTHON – USED ON EARLIER MODELS





The HOC system is designed to unload the hydraulic system when the pump flow exceeds 55 GPM.

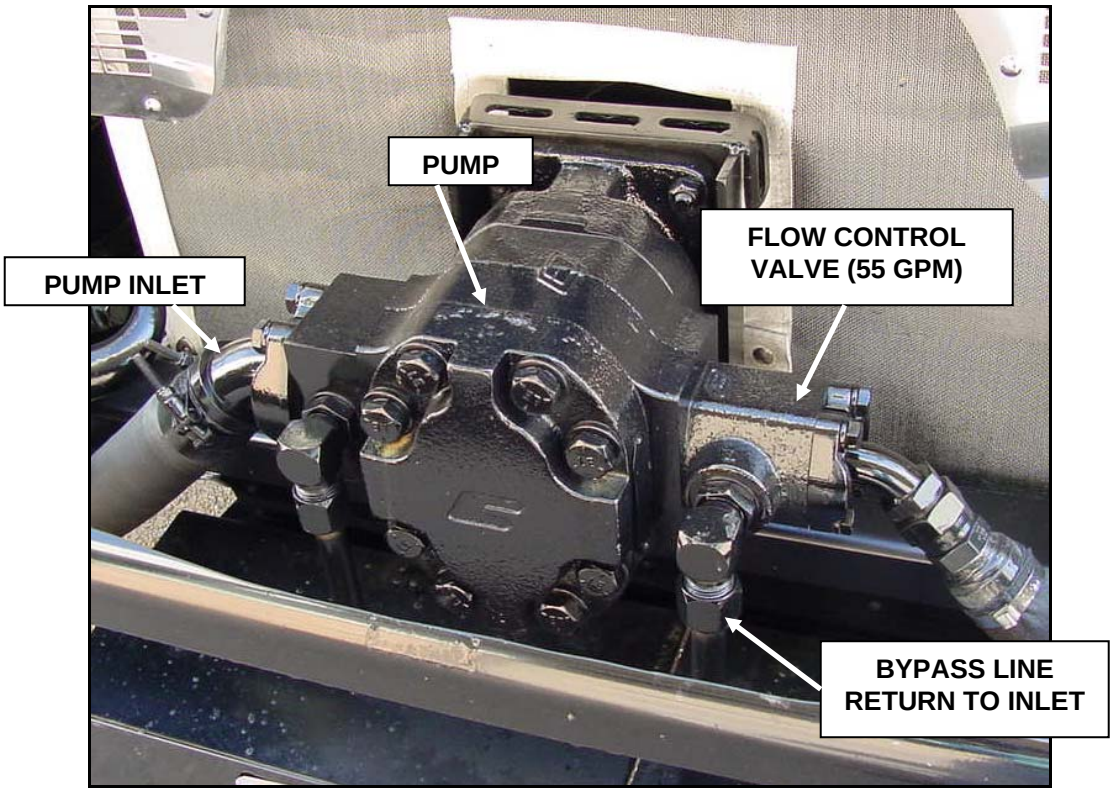
Hydraulic system unloading occurs when the pressure drop across the flow control orifice reaches 50 PSI.

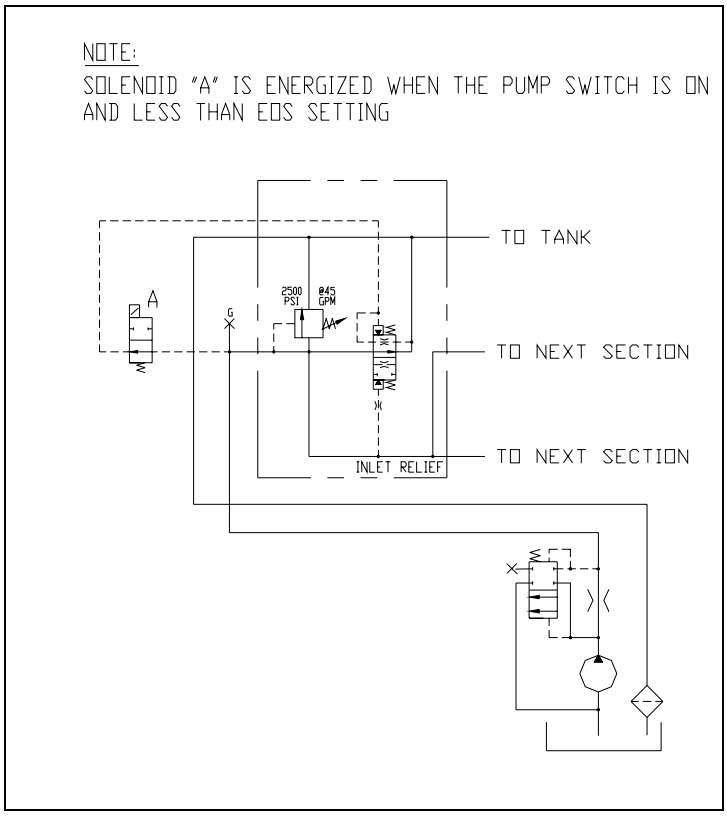
To restore power to the hydraulic system, the operator must lower the engine speed 300 to 400 RPM below the HOC speed setting.

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PYTHON COMMERCIAL FRONT MOUNT (HOC) – LATER UNITS





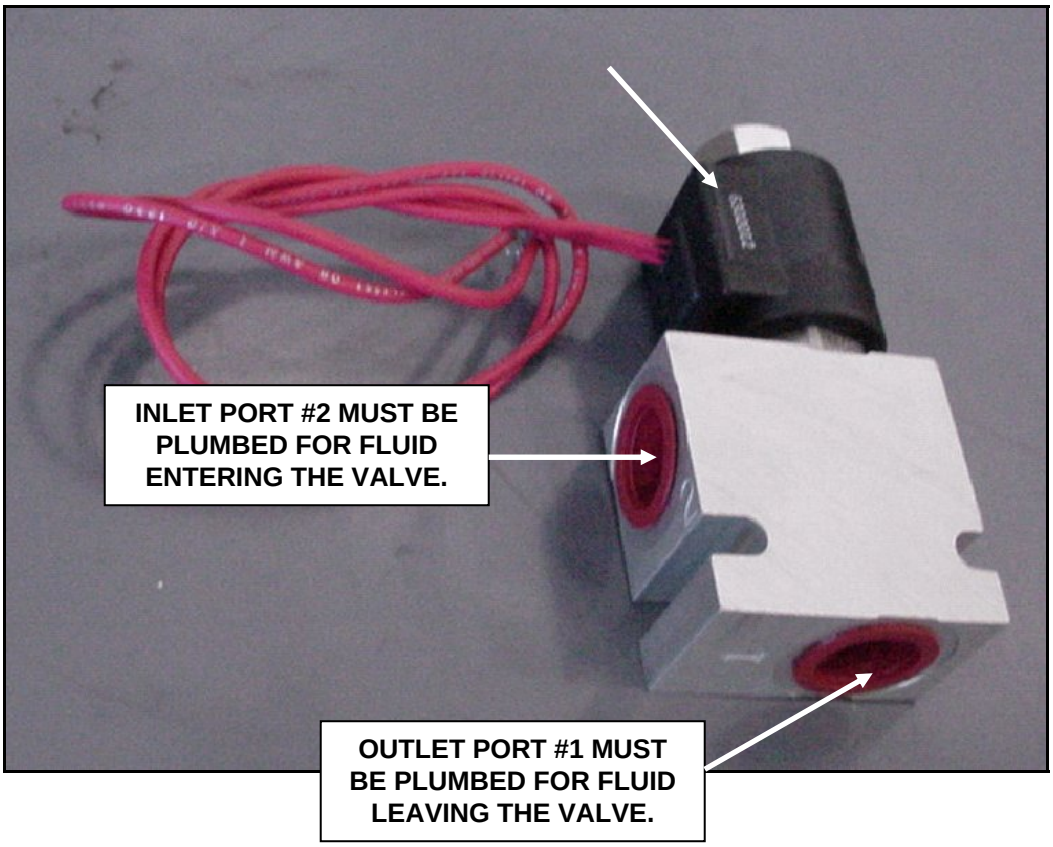
The HOC system is designed to unload the hydraulic system when the pump flow exceeds 55 GPM.

Solenoid A is located on the lift control valve. See Section 2 – Lift Service Manual for more information.

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PUMP SHUT-OFF VALVE – USED WITH COMMERCIAL HOC SYSTEM



This pump shut-off valve style normally opens and closes when the coil is activated. The valve does not have a plumbing schematic but must be plumbed one way to function properly. Fluid must enter port #2 and exit port #1.

Caution: Failure to plumb the pump shut off valve in this manner may cause system malfunction or “system chatter”.

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FLOW CONTROL VALVE TESTING FOR HOC PUMP

Follow these steps to test the flow control valve.

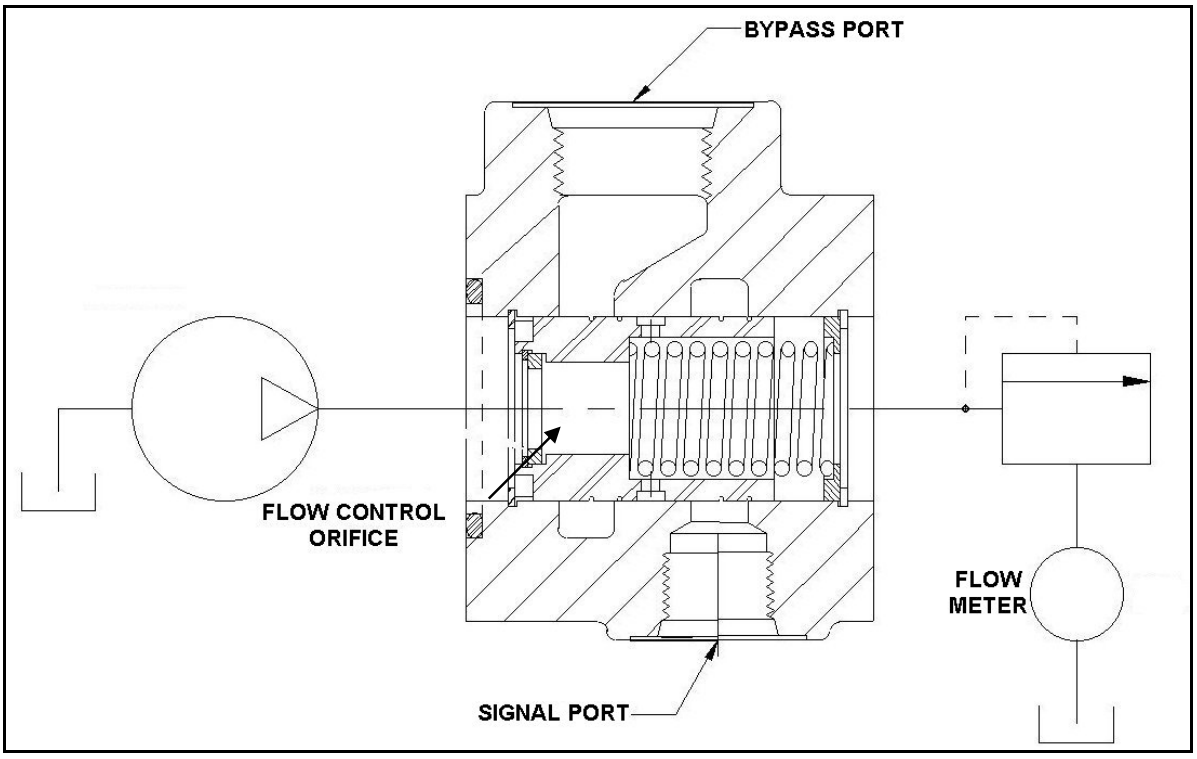
BYPASS AND BINDING TEST

1. Warm hydraulic system temperature to 120°F.
2. Increase oil flow through the flow control valve until you reach 55 GPM.
3. When the oil starts flowing from the bypass port, record the flow going through the valve. The oil should bypass at +/- 3 GPM of the 55 GPM flow.
4. Cycle two or three more times to be sure valve spool moves freely and does not bind.
5. If the valve exceeds 55 GPM, check for the correct orifice in the spool.

FLOW CONTROL LEAKAGE TEST

Check valve spool leakage by running 50 GPM (5 less than the actual flow of 55 GPM) through the valve with 1100 PSI on the flow control valve outlet. The flow control leakage should not exceed 1000 CC/minute (about 1/4 GPM) from the valve signal port.

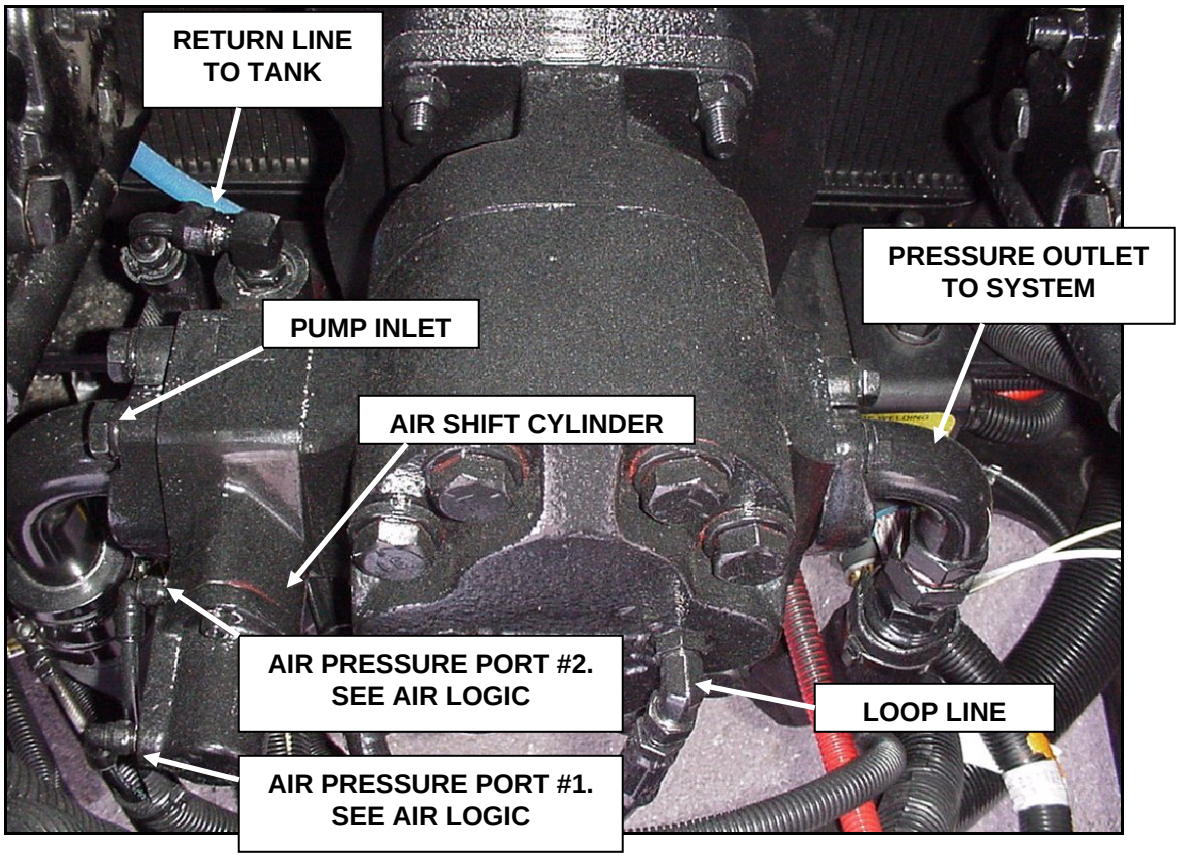
Orifice Part No.	GPM
031-5776-001	55 – 60
031-5776-002	50 – 54
031-5776-003	45 – 49
031-5776-004	40 – 44
031-5776-005	35
031-5776-006	20

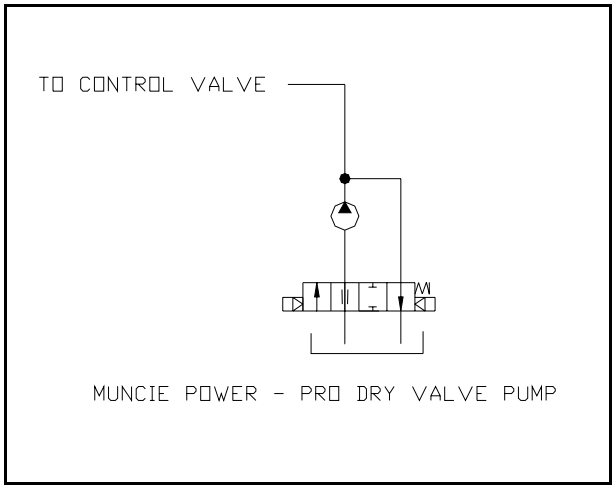


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SINGLE GEAR PUMP WITH POWER PRO DRIVE VALVE (MUNCIE)





This pump set up does not require a constant flow valve in the OFF mode. The power pro dry valve system allows pump cooling and lubrication through the loop line and back to the tank when the system is in the off mode. In the ON mode the loop line is closed to tank and all fluid is sent to system pressure.

AIR LOGIC

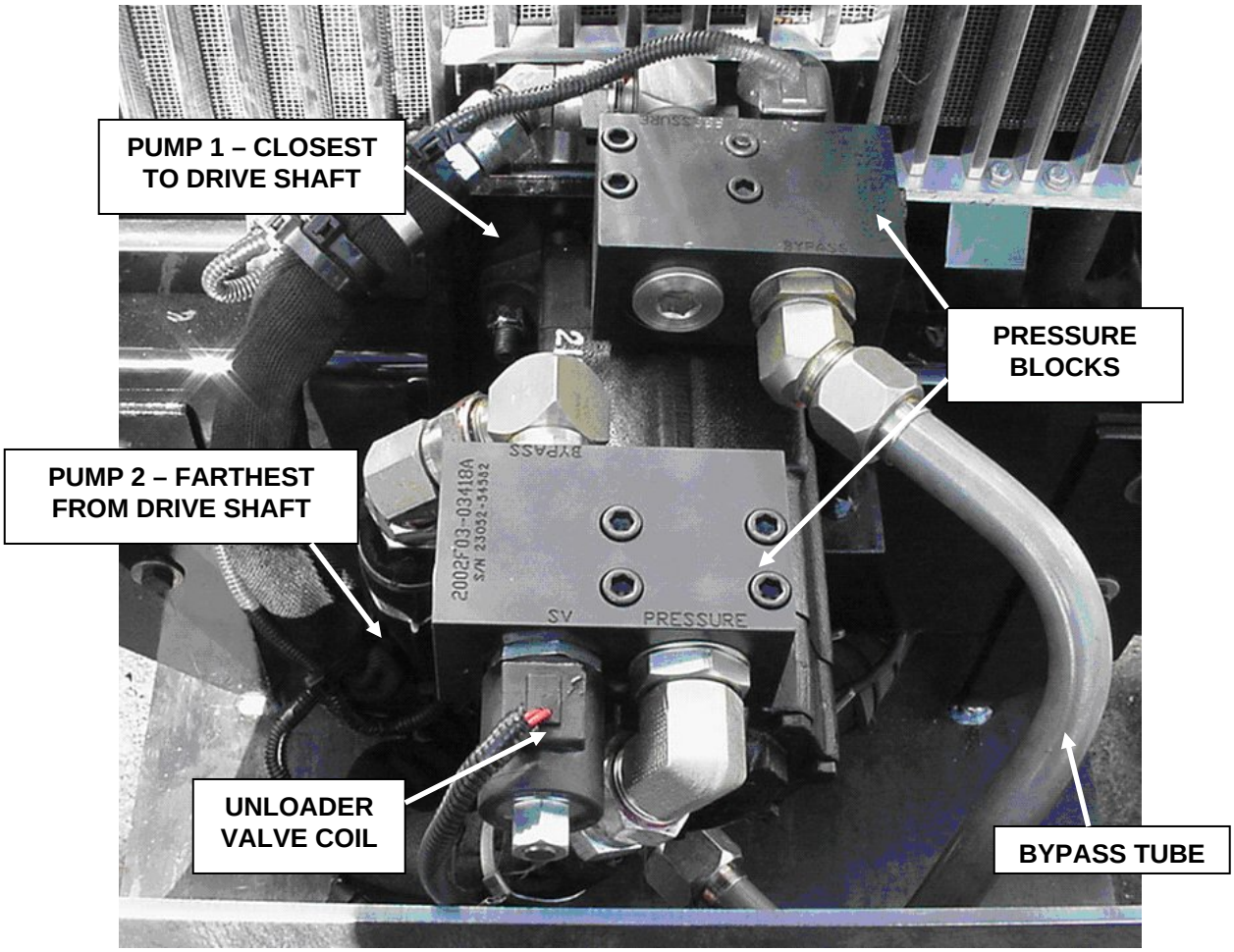
Pump On – Apply air pressure to port #1 and release air pressure from port #2.

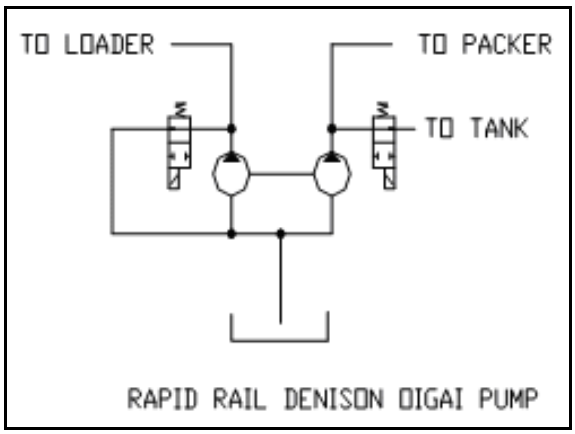
Pump Off – Release air pressure from port #1 and apply air pressure to port #2.

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TANDEM O.I.G.A.I. PUMP – FRONT LOADERS, REAR LOADERS, RECYCLE 2000, CP PYTHONS





This is the Hydraulic Controls Operate-In-Gear-At-Idle (OIGAI) system. The pump section (pump 1) closest to the input shaft operates the lift and shuts off first. The pump section (pump2) farthest from the input shaft operates the packer and stays on at higher RPMs.

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REAR LOADER OAI OPERATION FOR PROGRAM 109-0205

The rear loader Operate-at-Idle (OAI) fast cycle pump system uses a tandem vane pump with a P1 front section (closest to input shaft) and a P2 back section (farthest from input shaft). The PLC program, electrical wiring, electronic pressure switch adjustment, and hydraulic plumbing are all critical and must be exact for this system to function properly.

PowerTrak Commercial and PowerTrak 1000 - P1 front section uses a 42 GPM cam ring; P2 back section uses a 35 GPM cam ring; Packer cycle time 15-17 seconds.

This hydraulic system produces the most flow and has the fastest cycle times at engine idle speed. The system is designed to operate all hydraulic functions at idle. The throttle advance switches on the body do not cause the engine RPMs to increase but calls for more flow by turning on P1. This system also allows for pack-on-the-run.

PLC PROGRAM 109-0205

- Uses input 0.04 to monitor the ON / OFF status of the throttle advance switches. This input should be ON when either of the throttle advance switches on the body are activated.
- Uses input 0.05 to monitor the ON / OFF status of the electronic pressure switch. The input should be OFF during low pressure and ON when the hydraulic system reaches the high pressure setting of the electronic pressure switch.
- Uses output 10.01 for P1 (pump closest to input shaft) to turn ON when the body throttle advance switch is activated and to shut OFF when above 1000 RPM or when the high pressure setting of the pressure switch is reached.
- Uses output 10.03 for P2 (pump farthest from input shaft) to turn ON when the pump switch is activated and to shut OFF when above 2000 RPM.

ELECTRONIC PRESSURE SWITCH

This switch is used to prevent the engine from stalling when using the front loader body functions during engine idle. Some engines do not produce enough net torque at idle and will stall while using some of the hydraulics functions.

The pressure switch is used to shut off the P2 (pump farthest from input shaft) just before the engine stalls. This setting (SP1) is generally around 2000 psi but can be customized to accommodate the particular engine characteristics for each individual machine.

The re-engage pressure is set at 1300 psi. This is the pressure that tells the pump to turn ON again. For example, if the pump shuts OFF at 2000 psi and turns back ON at 1300 psi, the re-engage setting is 700 psi. A re-engage setting that is too low may cause hydraulic system chatter.

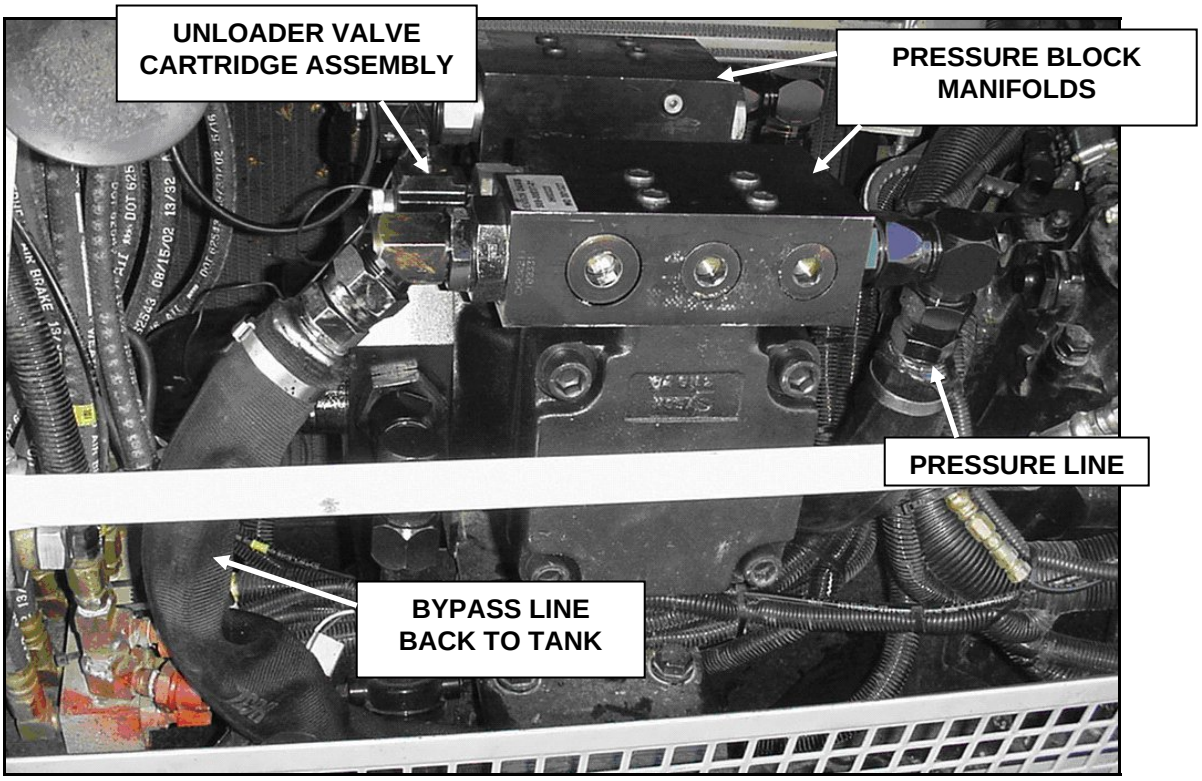
The electronic pressure switch must be plumbed into the main pressure circuit at the hydraulic pump pressure block to work properly. Shut OFF the smaller P2 at idle to prevent engine stall. A pressure switch that is plumbed or wired incorrectly can cause hydraulic system chatter.

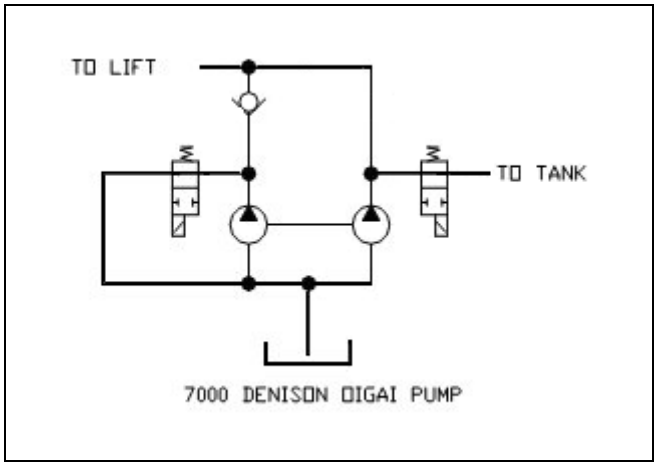
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TANDEM VANE PUMP WITH MONOBLOCK CONTROL MANIFOLDS – NON-O.I.G.A.I. COMBINED FLOW – DP7000 AUTO SIDE LOADER, F4000 O.I.G.A.I., PT1000 O.I.G.A.I.





This pump uses three manifolds to direct the flow of oil away from the pump to the system pressure circuit.

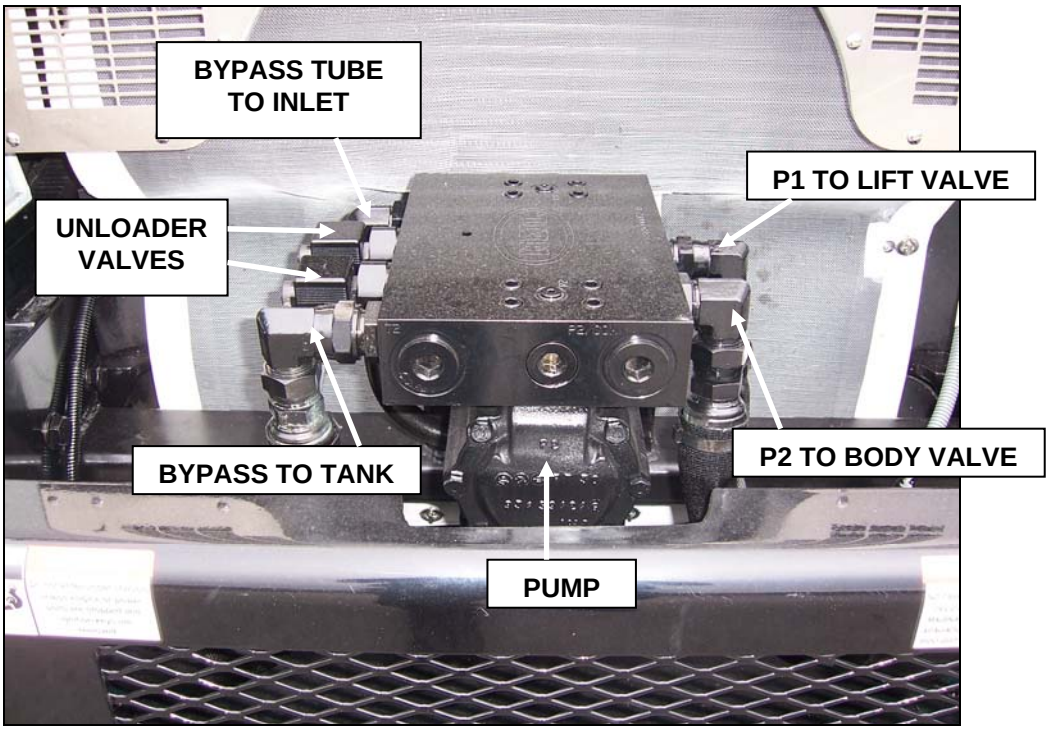
The two pressure block manifolds each contain an unloader valve cartridge and coil assembly to activate the system and an internal one-way check valve for each pump circuit.

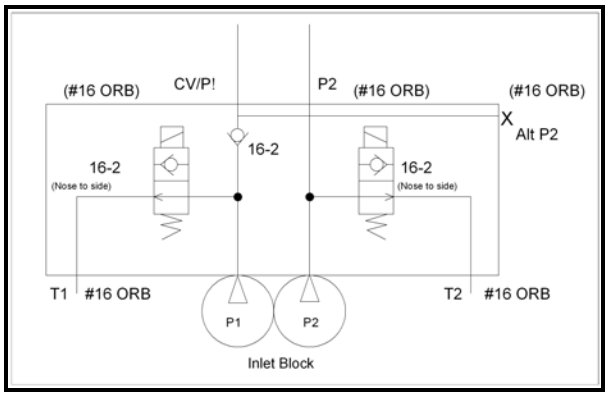
The pump closest to the input shaft shuts OFF first at lower RPMs while the pump farthest from the input shaft stays ON at higher RPMs.

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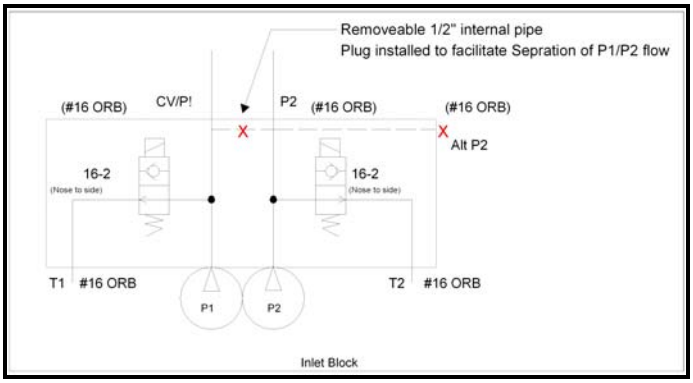
TANDEM VANE PUMP WITH MONOBLOCK SEPARATE OUTLET FLOW – RAPID RAIL AND PYTHON AUTO SIDE LOADER





In the monoblock Operate-in-Gear-at-Idle hydraulic system. The pump section (pump 1) closest to the input shaft operates the lift and shuts OFF first. The pump section (pump 2) farthest from the input operates the packer and stays ON at higher RPMs.

Combined Flow

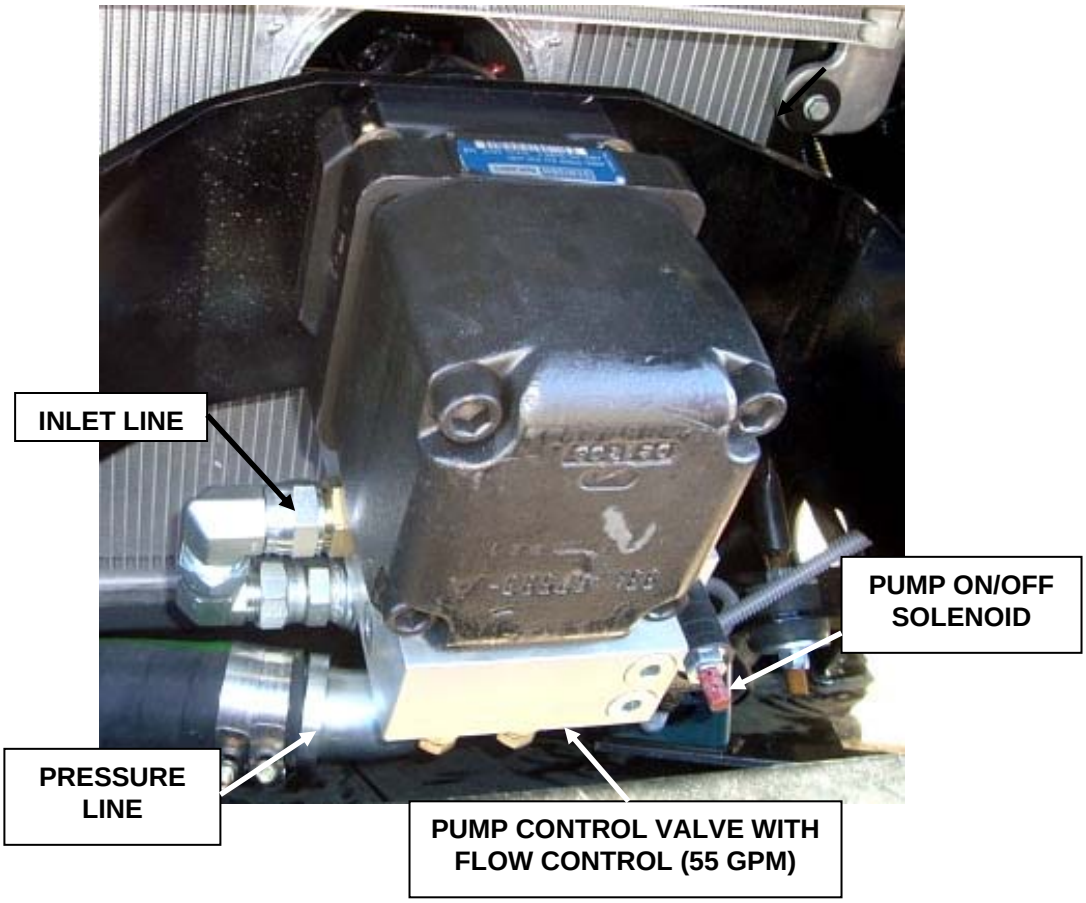


Isolated Flow

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SINGLE VANE PUMP WITH CONTROL MANIFOLD – FRONT END LOADERS AND PRE-2010 DP PYTHONS



The single vane pump control valve is designed to limit the flow to 55 GPM. Excess flow is re-circulated to the inlet.

The pump ON/OFF valve must have power to turn the pump ON.

When the pump solenoid is in the OFF mode, oil is allowed to circulate back to the inlet.

The maximum pump speed is controlled by the PLC.

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SINGLE PUMP REPAIR PROCEDURES

Heil has migrated many products to a high pressure vane pump. Although ratings vary, these pumps are generally rated for higher pressure and higher duty cycles than similar size gear pumps. Because of the design of a vane pump, it is generally not necessary to replace the entire pump. The pump cartridge contains all of the wear items in a vane pump. Replacing the cartridge provides the same performance as replacing the entire pump.

Use the following procedures to field repair and inspect a Heil single vane pump. The procedure was performed on an Autocar chassis and can be used on other chassis. These instructions show complete tear down of the pump assembly. They can be used to replace a failed pump cartridge or failed pump shut-off valve.

Before making adjustments, make sure the unit is in the LOCK-OUT position. LOCK-OUT position is defined as follows:

1. Engine stopped and ignition key removed.
2. Set the brakes and make sure they are holding.
3. Chock all wheels.
4. Insert a LOCK-OUT tag on the steering wheel.



Tools Required

Tools needed to replace the pump include the following:

- 1 1/2 inch open end boxed end wrench
- 3/4 inch open end boxed end wrench
- Wire cutters (Dikes)
- 1/2 inch drive ratchet
- 14mm 1/2 inch drive hex head socket
- 3/8 inch hex head wrench
- 5/32 inch hex head wrench
- Torque wrench capable of producing 150 ft lbs.
- NOTE: Test the cartridge for damage by flow testing the pump before disassembly.

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1. Remove the zip tie from the oil shut-off valve on the hydraulic oil tank. (Figure 1)



Figure 1 Cut zip tie

2. Turn the shut-off valve to the OFF position. (Figure 2).



Figure 2 Turn off shut-off valve

3. Remove the grill from the chassis. (Figure 3)
The number of bolts for the grill varies with chassis brand.



Figure 3 Remove grill

4. Cut the zip tie around the electrical wiring that controls the pump shut-off valve solenoid. (Figure 4)

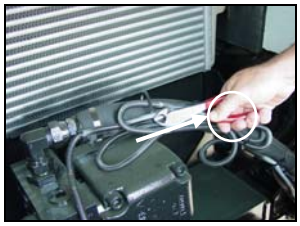


Figure 4 Cut zip tie around wiring

5. Disconnect the electrical wiring—the two-way Packard plug—that controls the pump shut-off valve solenoid. (Figure 5)



Figure 5 Disconnect wiring

6. Remove the one-inch hydraulic pressure hose. (Figure 6)



Figure 6 Remove hydraulic pressure hose

7. Remove the four suction line flange bolts. (Figure 7)



Figure 7 Remove flange bolts

8. Remove the eight bolts connecting the pump shut-off valve to the pump. (Figure 8) There are four small bolts and four large bolts.

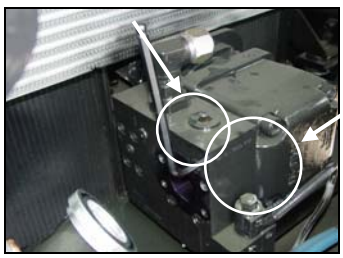


Figure 8 Remove bolts from shut-off valve

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9. Carefully, remove the shut-off valve from the pump. (Figure 9)



Figure 9 Remove shut-off valve

10. Remove the four pump housing connecting bolts. (Figure 10)



Figure 10 Remove housing connecting bolts

11. Carefully remove the pump case housing. (Figure 11)



Figure 11 Remove housing

12. Remove the pump cartridge by pulling it toward you. (Figure 12) The fit may be tight.



Figure 12 Remove pump cartridge

13. Inspect the pump shaft, spines, and bearings for wear and damage. (Figures 13 and 14) Check for the following:
 - Sheared or worn shaft splines.
 - Broken bearing



Figure 13 Inspect parts



Figure 14 Inspect parts

14. Inspect the brass bushing on the pump cartridge for wear and damage. (Figure 15)

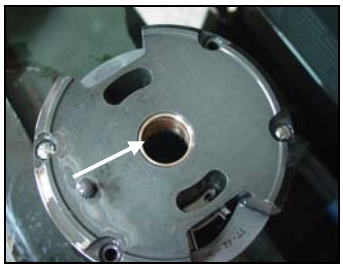


Figure 15 Inspect brass bushing

15. Check the outer housing O-ring for wear or damage such as nicks, fraying, or cuts. (Figure 16) Replace the o-ring if it is damaged.

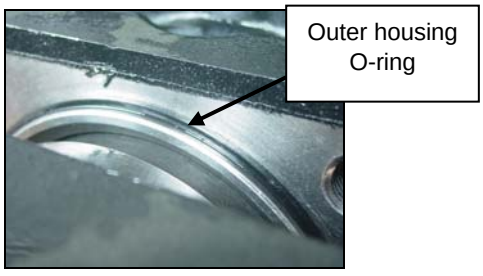


Figure 16 Check O-ring

16. Place the pump cartridge back on the pump shaft. (Figure 17)



Figure 17 install pump cartridge

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17. Replace the outer pump housing and finger-tighten the four pump housing bolts. (Figure 18)



Figure 18 Replace outer housing and bolts

18. Tighten the four outer housing bolts to 138 ft lbs. (Figure 19)



Figure 19 Torque housing bolts to 138 ft lbs

19. Install the new pump shut-off valve using the new bolts included with the new valve. (Figure 20)



Figure 20 Install new shut-off valve

20. Tighten the eight pump shut-off valve bolts as follows: (Figure 21)
 - Four small back bolts – 60 ft lb
 - Four large front bolts – 92 ft lb



Figure 21 Torque shut-off valves

21. Install the suction line flange to the pump shut-off valve and tighten the four bolts on the flange. (Figure 22)

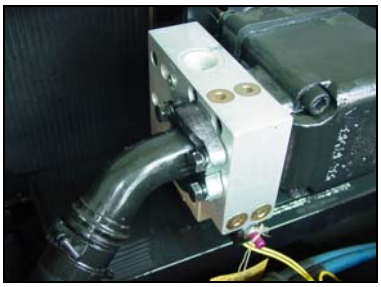


Figure 22 Replace suction line

22. Install one straight connector, 054-3341-10, to the **P Port** on the shut-off valve. (Figure 23)

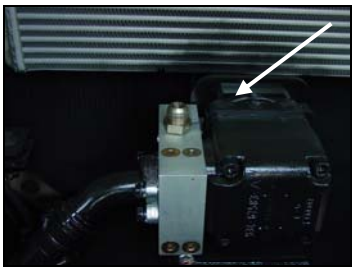


Figure 23 Install straight connector

23. Install one 90 degree elbow, 054-2988-10, on the straight connector. (Figure 24)

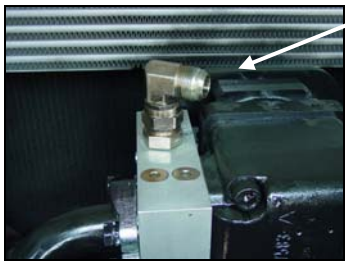


Figure 24 Install 90 degree elbow

24. Connect the one inch hydraulic pressure hose to the 90 degree elbow. (Figure 25)

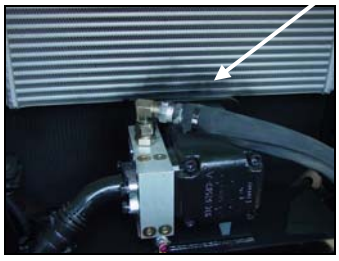


Figure 25 Reconnect hydraulic pressure hose

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25. Install the following two-way Packard connector to the two wires coming from the solenoid on the new shut-off valve: (Figure 26)
 - 1 ea – 108-4827-004 Two-way female connection
 - 2 ea – 108-4827-120Female terminal (18-20AWG)
 - 2 ea – 108-4827-132 Cable seal (16-14 GA)

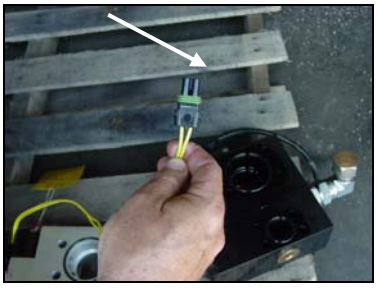


Figure 26 Install two-way Packard connector

26. Connect the new Packard connector to the original, matching Packard connector. Secure the excess wiring harness for the solenoid to the hydraulic pressure line with a zip tie. (Figure 27)



Figure 27 Connect plugs and secure excess wiring

27. Attach the grill to the chassis. (Figure 28)



Figure 28 Reattach grill

28. On the hydraulic oil pump, move the shut-off valve to the OPEN position and secure the valve with a zip tie. (Figure 29 and 30)



Figure 29 Open valve



Figure 30 Secure valve

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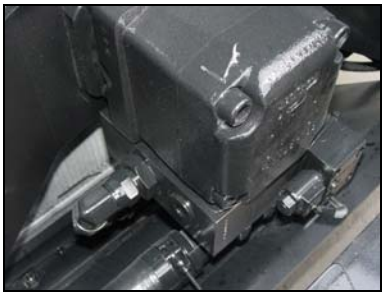
The following pictures show the 219-2303 pump configuration installed on a another chassis.











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TROUBLESHOOT PUMP 219-2303 WITH 031-6427

In 2007, Heil changed the pump control valve to a design that easily allows testing the pump and the pump control valve functions on the vehicle.

1. Hydraulic functions do not operate.
 - When pump should be on, verify there is at least 10 volts at the pump coil.
 - If 10 or more volts are present proceed to step 2.
 - If not, determine if the PLC program (if so equipped) is at fault or a wire is broken.
2. When pump should be on, pull red knurled knob on the end of the solenoid valve. (Figure 1)
 - Does the system work now?
 - If so replace the coil
 - If not proceed to step 3

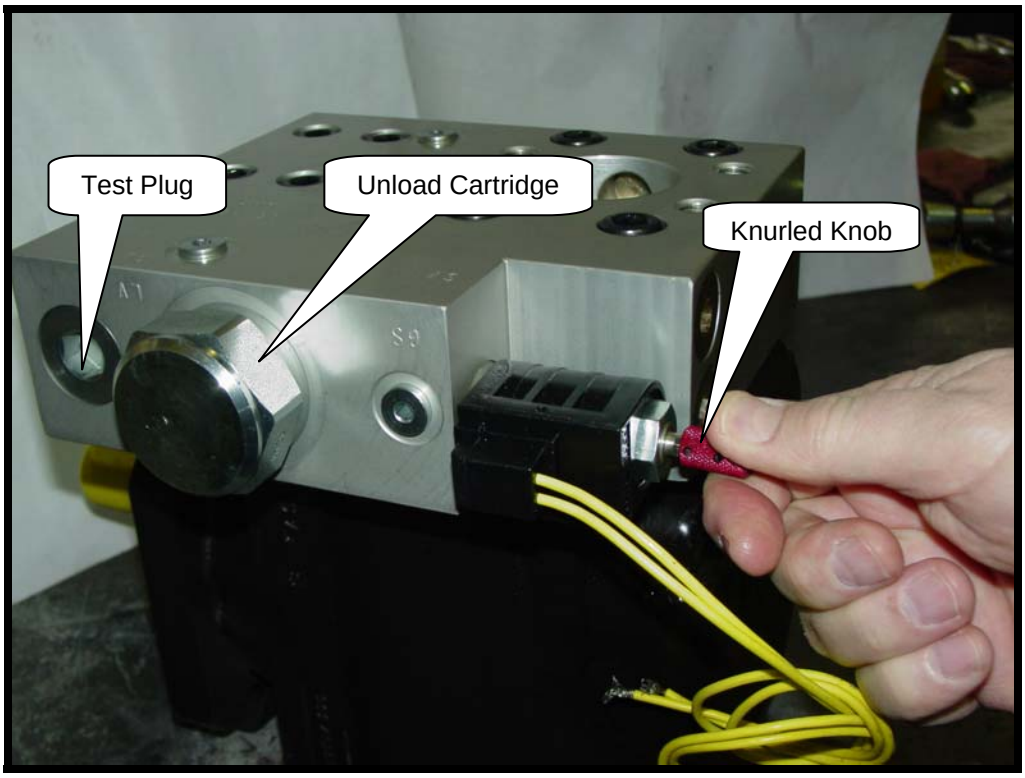


Figure 1

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3. Remove the unloading cartridge. (Figure 2) Temporarily set aside in a clean location.



Figure 2

4. Remove test plug located in the side of the pump control valve. (Figure 1)
5. Insert pug in the port where the unload cartridge was removed. There is a thread for it at the bottom of the cavity. (Figure 3)

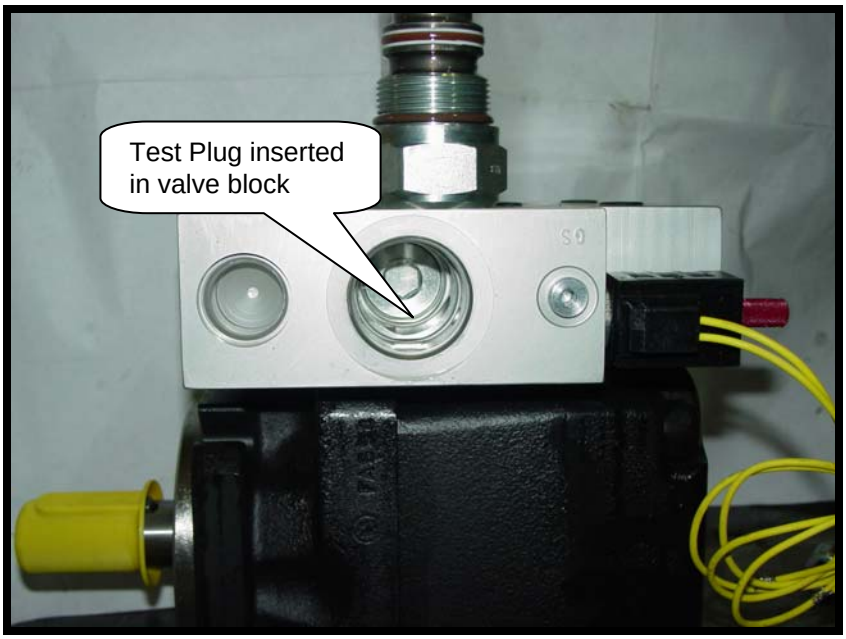


Figure 3

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6. Reinsert the unload cartridge. (Figure 4)

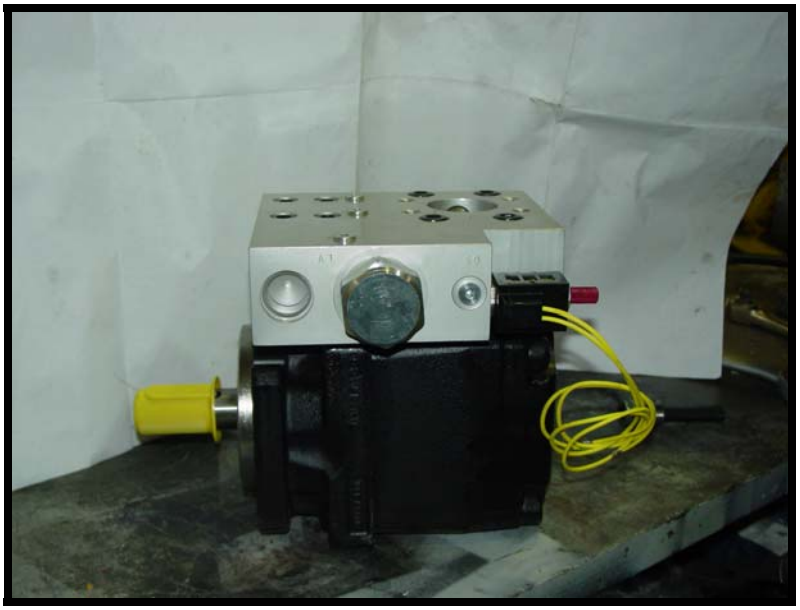


Figure 4

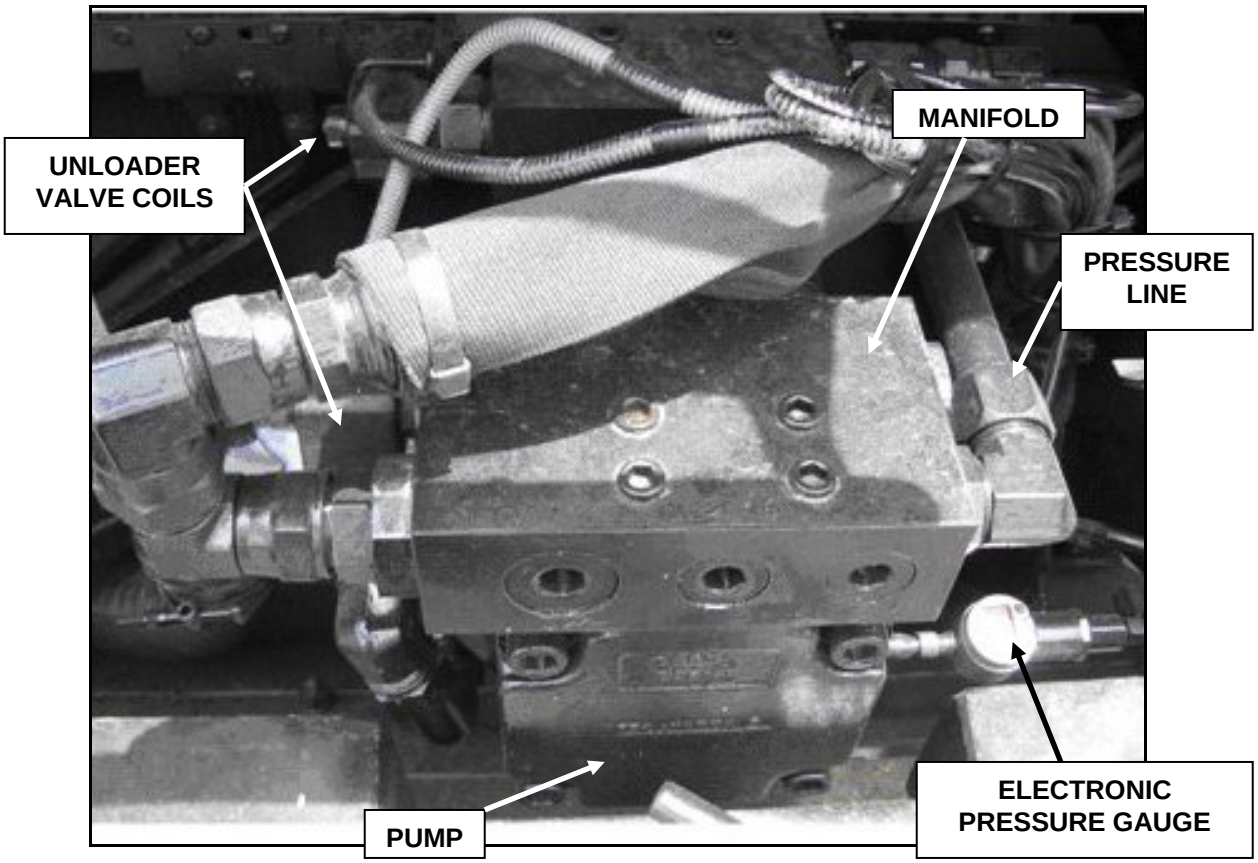
7. Start the truck and test all functions.
 - If the system now works correctly the problem is in the pump control valve.
 - If the system still does not function correctly the pump cartridge need to be replaced.
8. Remove the unload cartridge. Temporarily set aside in a clean location.
9. Remove the test plug and replace it in the side of the pump control valve.
10. Reinstall the unload cartridge.

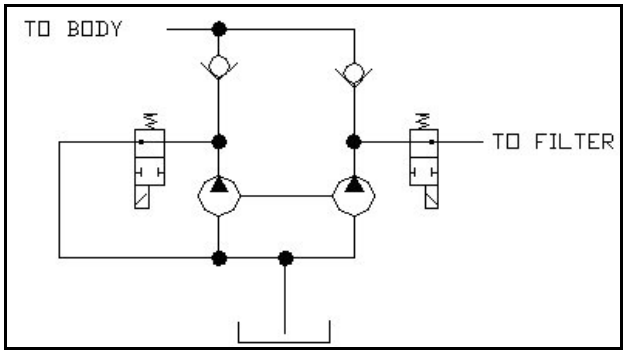
WARNING: Always remove the test plug before running the truck on routes to prevent hydraulic system failure.

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TANDEM VANE PUMP FRONT LOADER O.A.I. OPERATION – PROGRAM 109-0229





The tandem pump with the pressure manifolds combines the flow of oil from both pumping sections to get normal cycle times for the packer and body functions at engine idle.

The pumping section closest to the pump input shaft (P1) shuts OFF first during higher RPMs. The pumping section farthest from the pump input shaft (P2) stays ON longer during higher engine RPMs. The packer cycle time for units using this pump is fastest during engine idle up to 1050 RPM.

The separate pressure block manifolds contain two unloader valve and coil assemblies used to activate each respective pumping section and control the flow of oil directed to the hydraulic system.

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FRONT LOADER O.A.I. PUMP OPERATION FOR PROGRAM 109-0229

The front loader Operate-at-Idle (OAI) pump system uses a tandem vane pump with a large ring in the P1 front section (closest to input shaft) and a smaller P2 back section (farthest from input shaft). The PLC program, electronic pressure switch, electrical wiring, and hydraulic plumbing are all critical and must be exact for this system to function properly.

This hydraulic system produces the most flow and has the fastest cycle times at idle up to 1050 RPM. The system is designed to operate all hydraulic functions at idle.

PLC PROGRAM 109-0229

- Uses input 01.02 to monitor the ON / OFF status of the electronic pressure switch. The input should be ON during low pressure and shut OFF when the hydraulic system reaches the high pressure setting on the electronic pressure switch.
- Uses output 10.05 for PI (50 GPM pump closest to input shaft) to shut OFF at 1050 RPM.
- Uses output 11.06 for P2 (38 GPM pump farthest from input shaft) to shut OFF at 2100 RPM or when the high pressure setting of the pressure switch is reached.

ELECTRONIC PRESSURE SWITCH

This switch is used to prevent the engine from stalling when using the front loader body functions during engine idle. Some engines do not produce enough net torque at idle and will stall while using some of the hydraulics functions.

The pressure switch is used to shut off the P2 (pump farthest from input shaft) just before the engine stalls. This setting (SP1) is generally around 2000 psi but can be customized to accommodate the particular engine characteristics for each individual machine.

The re-engage pressure is set at 1300 psi. This is the pressure that tells the pump to turn ON again. For example, if the pump shuts OFF at 2000 psi and turns back ON at 1300 psi, the re-engage setting is 700 psi. A re-engage setting that is too low may cause hydraulic system chatter.

The electronic pressure switch must be plumbed into the main pressure circuit at the hydraulic pump pressure block to work properly. Shut OFF the smaller P2 at idle to prevent engine stall. A pressure switch that is plumbed or wired incorrectly can cause hydraulic system chatter.

NOTE: This document covers 109-0229 as of August 1, 2007.

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TANDEM VANE PUMP O.I.G.A.I. HYDRAULIC SYSTEM TROUBLESHOOTING

The Operate-in-Gear-at-Idle (OIGAI) system is designed to perform the side loading operations at standard idle speed. It is comprised of two major components, the monoblock tandem vane pump and attached unloader valve assembly.

On Rapid Rail systems the P1 or front section (closest to the pump input shaft) operates the loader section of the truck while the P2 or rear section (farthest from the input shaft) operates the body section, which includes the packer. On F7000 series units the flows from both pump sections are combined to run the lift (loader) then exit the lift valve to operate the body valve. On the Python, P1 goes to the lift and P2 combines after the lift valve to run the body.

The unloader valve assemblies consist of a manifold (pressure) block, a normally open (N.O. or NO) cartridge valve and a 12VDC-solenoid coil. In operation mode, the current is supplied to the valve coil causing the valve to CLOSE, forcing pump flow to the respective hydraulic circuit. In bypass mode, the coil is de-energized causing the valve to OPEN, allowing the oil to re-circulate either back to tank or to the pump inlet.

TROUBLESHOOTING

The symptoms of a problem in the pump circuit are no operation or slow operation of the loader or packer system. Since the F7000 series uses combined flows, a possible symptom of system malfunction is the packer operating at half the normal speed. On a Rapid Rail body with a Rapid Rail lift, each pump section controls one aspect of the system independent of the other. A malfunction of one pump's section will normally only affect one function of the truck. For example the packer will work correctly but not the loader or vice versa.

There are three primary causes for the pump circuit not to operate properly:

1. Low or no voltage to the unloader valve coil.
2. Malfunction in the unloader valve assembly.
3. Internal problem with the pump.

Perform the following test after finding that there is insufficient or no flow to the loader and/or body valves.

Check the Electrical Supply to the Unloader Valve Coils

With the system turned ON and the engine operating at idle, test the voltage at the coil. It should read a minimum of 10 VDC. If proper voltage is present and the problem persists, proceed to step 2. If the voltage is below 10 VDC, check the electrical system for problems that can cause a drop or loss of voltage to the unloader valve solenoid coil. Some examples are a broken or shorted wire, blown fuse, fault in the side door switch (if equipped), no alternator input or a failed PLC calibration.

Use an ohm meter to check resistance in the coil. If the measurement is less than 5 ohms or more than 20 then the circuit coil is damaged. If the coil is damaged, replace the coil.

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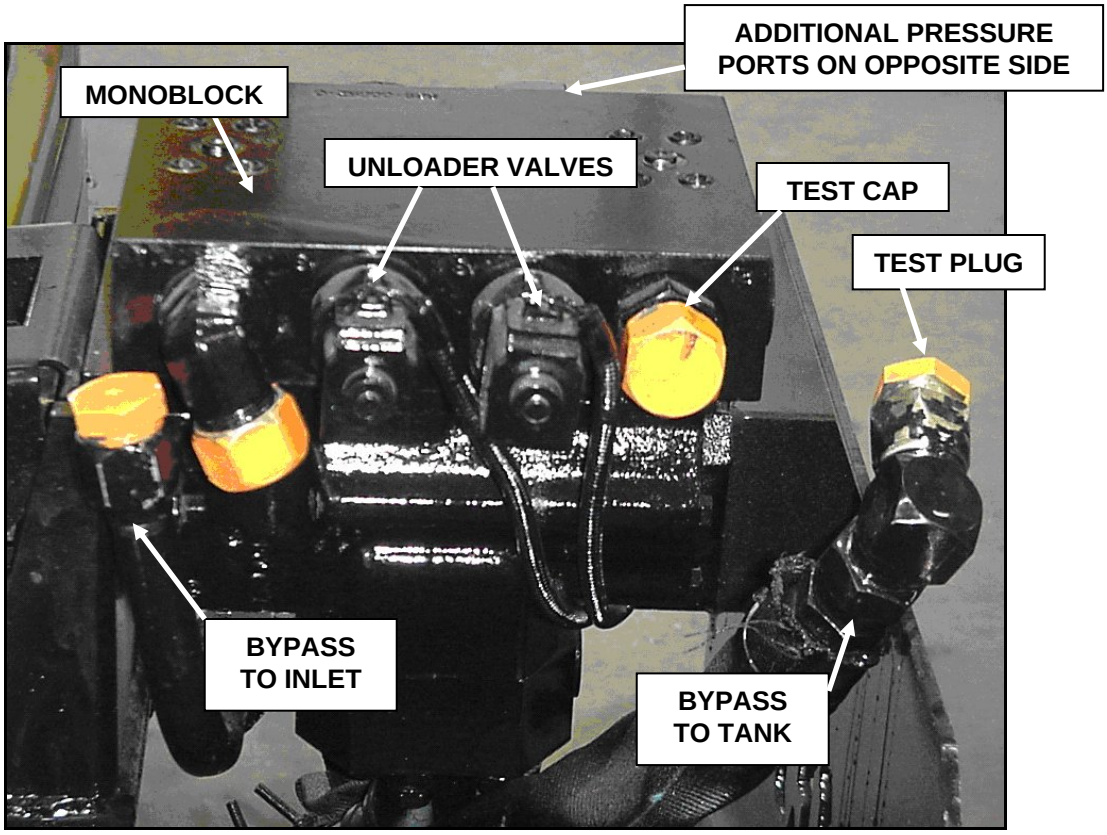
All Units

Eliminate the Unloader Valve from the Circuit

With the engine OFF, remove the bypass line from the pressure block port marked *bypass* . Disconnect the pressure hose or hoses sending oil to the lift and body functions. On the Rapid Rail and Pythons, there are two pressure hoses to be capped; on the F7000 and F4000 there is one hose to be capped. Cap and plug the tube connection for the bypass to the pump inlet. This forces all oil to the hydraulic circuits as if the pump is on. (NOTE: Pump control switches in the cab are no longer effective.)

Restart the truck and test the functions. If the lift and packer functions return to normal operation (speed and pressure within specifications), replace or repair the unloader assembly.

NOTE: If flow is present and the lift or packer operate only with no load, check the main relief valves for proper adjustment and operation.



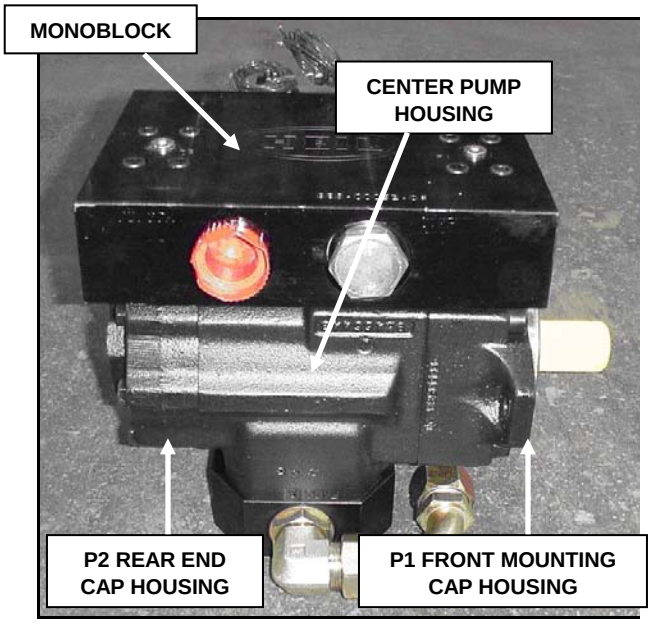
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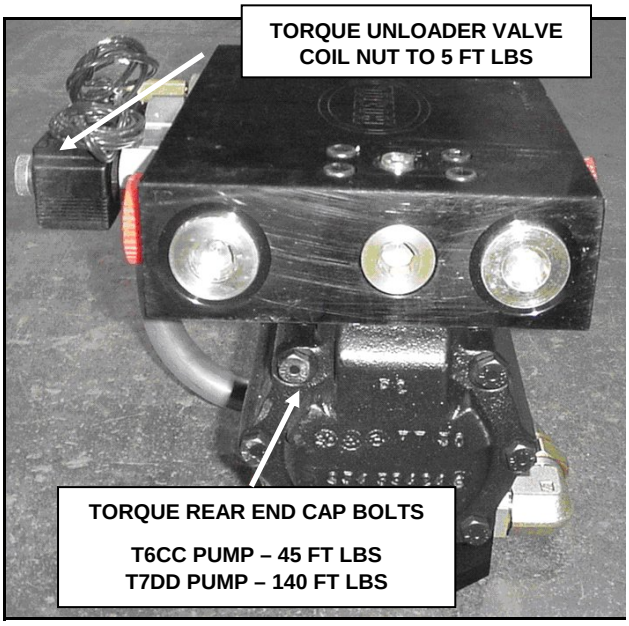
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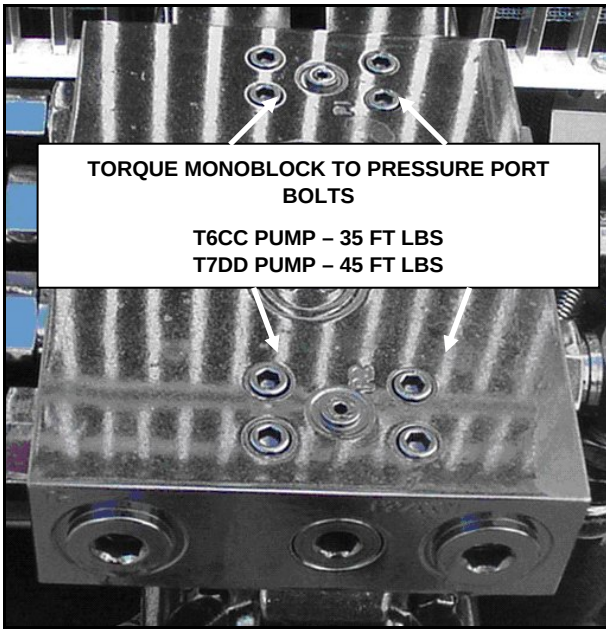
MOUNT PUMP MONOBLOCK TO TANDEM PUMP

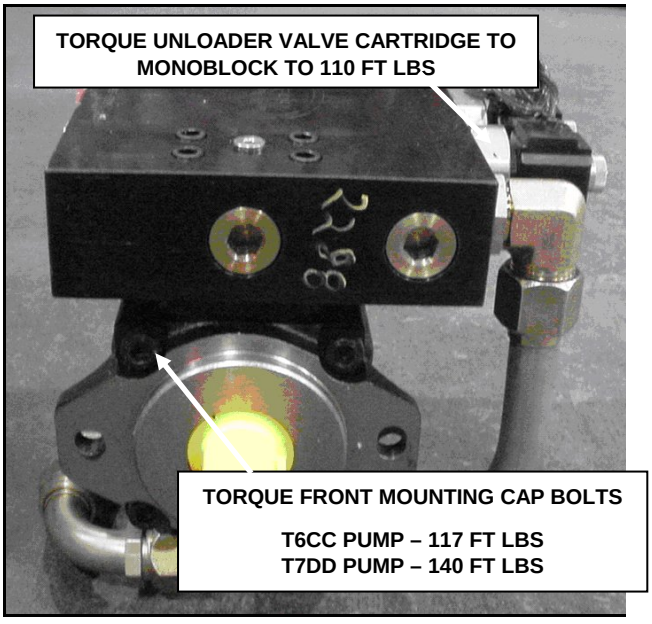
Follow these steps when mounting a monoblock to the tandem pump.

1. Loosen the rear end cap bolts and front mounting cap bolts to allow slight movement between the P1, center pump, and P2 housings. This aligns the P1 and P2 pressure ports with the monoblock.
2. Mount the monoblock using the eight (8) cap screws with hi-collar lock washers and torque the cap screws. **NOTE: Make sure the o-rings stay in place.**
3. Re-torque the bolts on the rear end cap and front mounting cap housings of the pump.
4. If either the unloader valve cartridge or the pilot valve cartridge (that screw into the unloader valve cartridge) is removed, it needs to be re-torqued. Re-torque the unloader cartridge to 110 ft. lbs. and the pilot cartridge (not shown) to 15 ft. lbs.





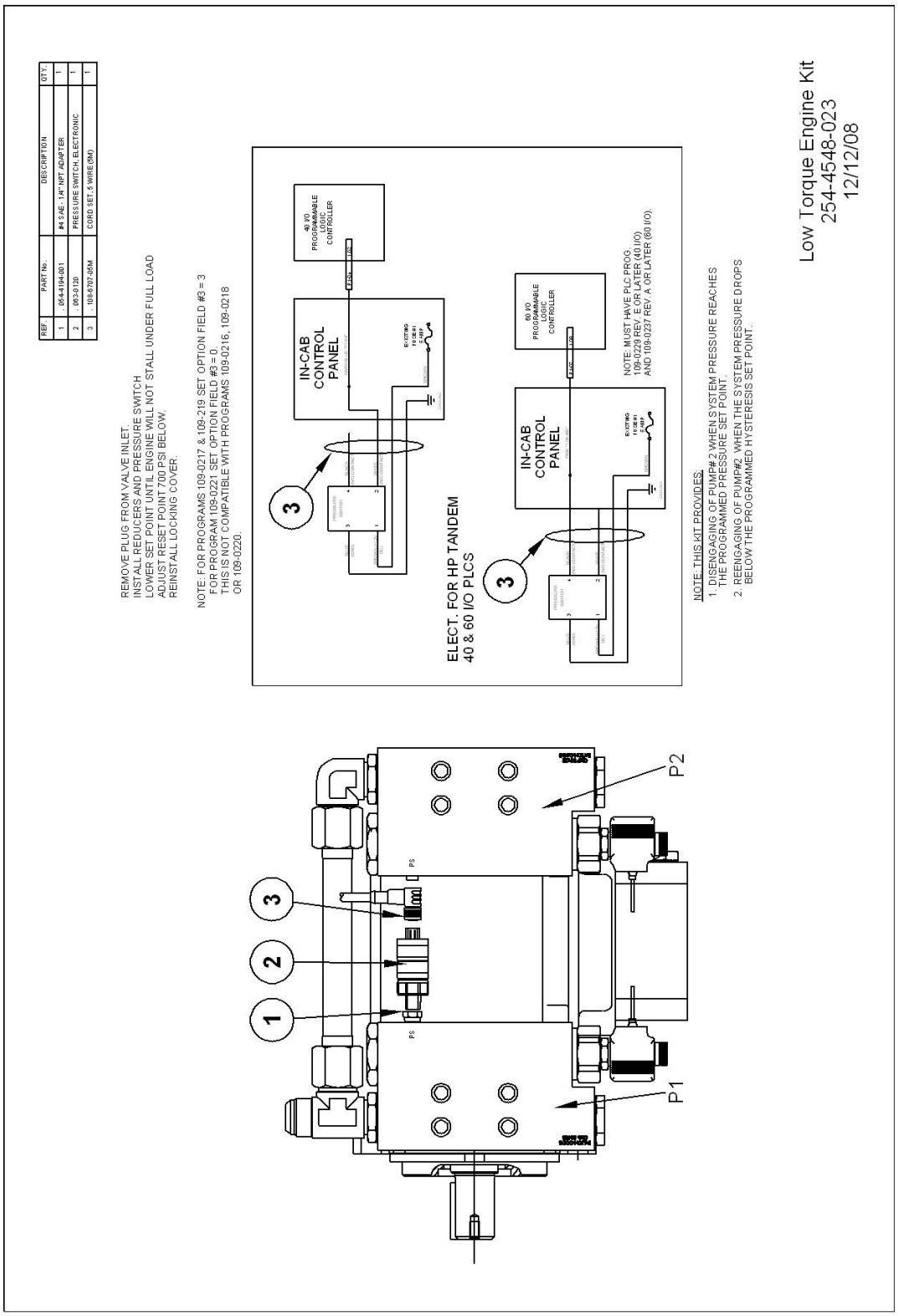




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PRESSURE SWITCH KIT – LOW TORQUE ENGINES



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SECTION 4-6 CONTROLS, BODY & TAILGATE

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Please refer to the legacy information at the beginning of this Service Manual.

This information will be updated and moved from the Legacy information into the applicable Service Manual 4, 5 or 6 during 2012.

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SERVICE MANUAL

SECTION 7
LIGHTS AND LAMPS

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All Units

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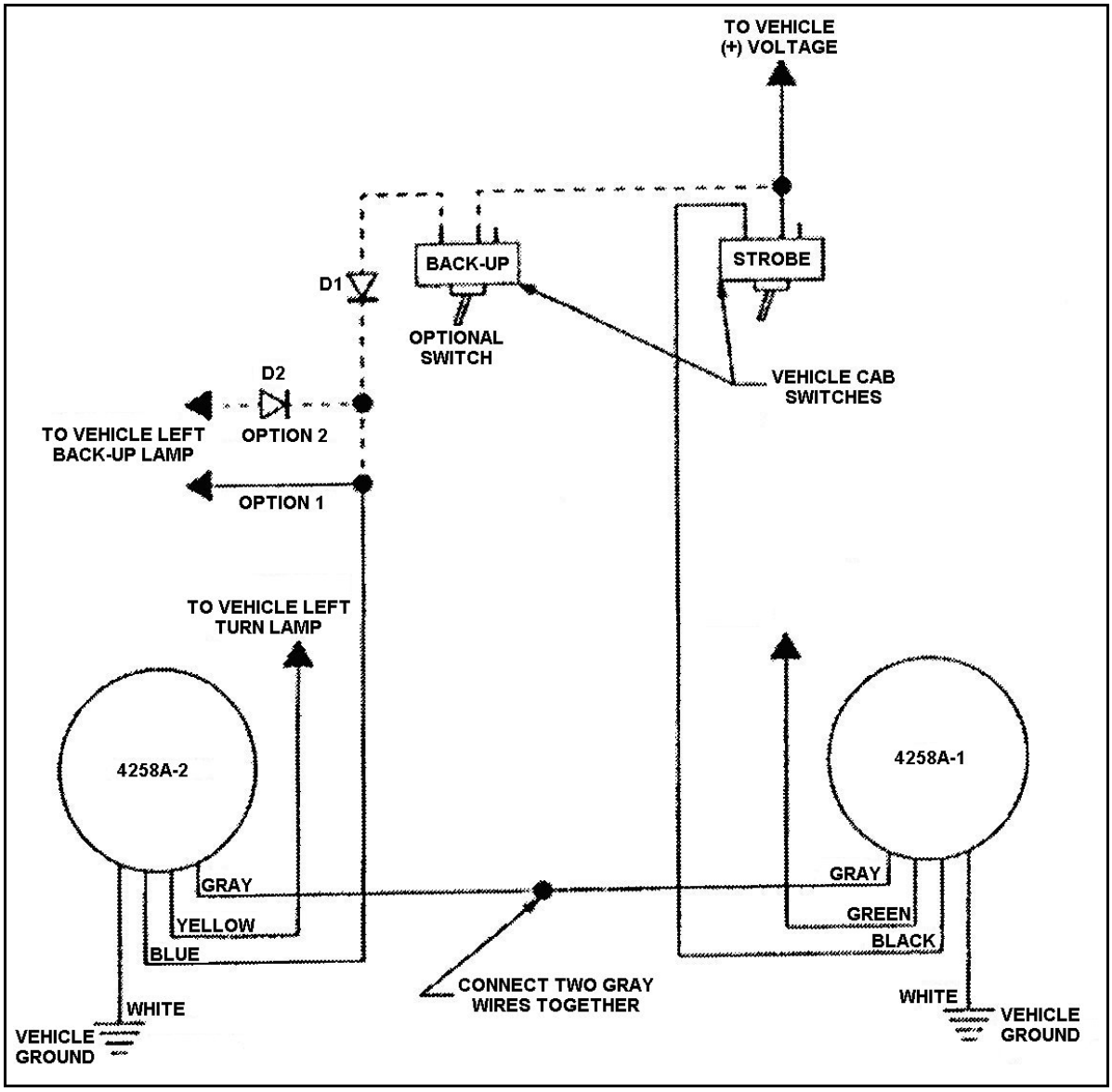
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SMART LAMP LIGHT SYSTEMS

Heil uses two different lighting systems. Both systems use LED lights that function as strobe lights and turn signals. The strobe function is manually activated with a switch in the cab or configured to strobe automatically when the vehicle is shifted into reverse. Activating a turn signal automatically overrides the strobe function so that the strobe light functions as a turn signal.

The two-light system contains one master light and one slave light. Both lights have a different part number and cannot be replaced or mixed with a different brand light. Some vehicles use two of the two-light systems combined for a total of four rear lights. When used in this combination, there are four strobe lights total but only two lights are synchronized.

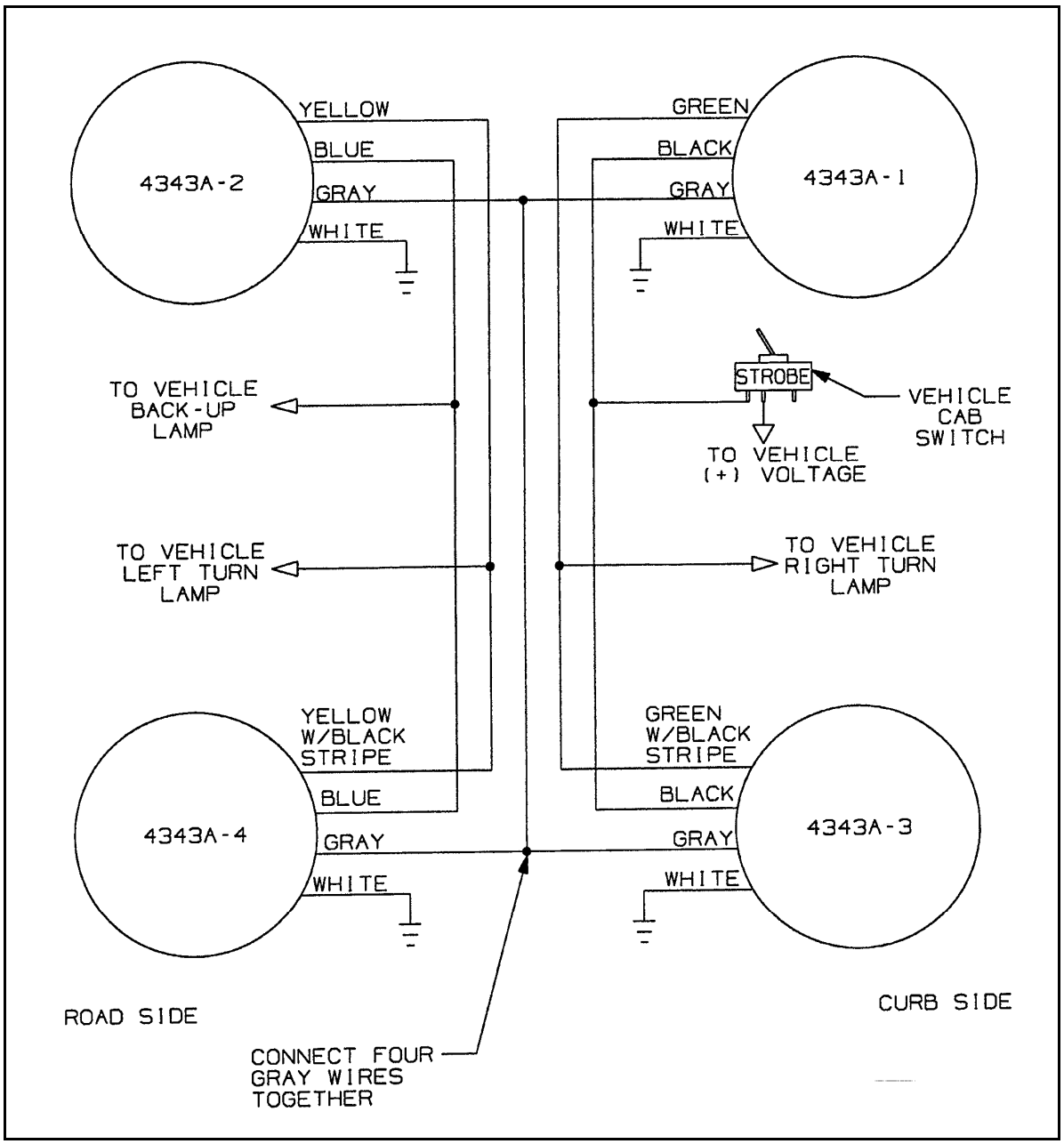


TWO-LIGHT SYSTEM

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The four-light system contains one master light and three slave lights. Each light has a different part number and cannot be replaced by another brand or mixed with a different brand light. This system provides for a total of four strobe lights that are synchronized to strobe in the same sequence.



FOUR-LIGHT SYSTEM

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LIGHTS

PART NO.	DESCRIPTION	REQ'D
115-0608	LIGHT, license plate (no breakdown)	REF
115-0742	LIGHT, stop, turn/tail (red) 4.00"	REF
115-0742-001	LIGHT	1
115-0742-002	GROMMET	1
115-0742-003	PIGTAIL	1
115-0743	LIGHT, back-up (clear) 4.00"	REF
115-0743-001	LIGHT	1
115-0743-002	GROMMET	1
115-0743-003	PIGTAIL	1
115-0760	LIGHT, clearance, (red) 2-1/2"	REF
115-0760-001	LIGHT	1
115-0760-002	GROMMET	1
115-0760-003	PIGTAIL	1
115-0761	LIGHT, clearance (amber)	REF
115-0761-001	LIGHT	1
115-0760-002	GROMMET	1
115-0760-003	PIGTAIL	1
115-0782	LIGHT, mid-turn (amber)	REF
115-0782-001	LIGHT	1
115-0782-002	GROMMET	1
115-0869-002	PIGTAIL	1
115-0869	LIGHT, stop (red) oval	REF
115-0869-001	LIGHT	1
115-1035	LIGHT, LED, stop/turn/tail, red	RED
115-1035-001	LIGHT, LED, stop/turn/tail, red	1
115-1035-002	PLUG, adaptor	1
115-0742-002	GROMMET	1
115-1180	LIGHT, LED strobe	REF
115-1180-001	LAMP	1
115-1179-002	PLUG	1
115-0869-003	GROMMET	1
115-1219	LIGHT, LED, reverse	REF
115-1219-001	LIGHT, LED, reverse	1
115-0742-001	GROMMET, light, 4" round	1
115-1224	LAMP, trapezoidal w/conn	REF
115-0918	LIGHT, trapezoidal beam	1
108-6461-012	DEUTSCH DT, 2 pin receptacle	1
108-7336-002	LOOM, 3/8" dia., unsplit	1'
115-1226	LIGHT, flood	REF
115-1225	LIGHT, work	1
108-6461-012	DEUTSCH DT, 2 pin receptacle	1
108-7336-002	LOOM, 3/8" dia., unsplit	1'

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PART NO.	DESCRIPTION	REQ'D
115-1229	LIGHT, LED, stop, oval, red	REF
115-1229-001	LIGHT, LED, stop, oval red	1
115-0869-002	GROMMET, mount	1
115-1230	LIGHT, LED clearance	REF
115-1045-001	LIGHT, LED clearance, red 2-1/2"	1
115-0720-002	GROMMET, mounting	1
115-1231	LIGHT, LED clearance	REF
115-1046-001	LIGHT, LED amber, 2-1/2"	1
115-0760-002	GROMMET, mounting	1
115-1232	LIGHT, strobe with brush guard	REF
115-1232-001	LIGHT, strobe	1
115-1232-002	GUARD, brush, strobe light	1
115-1245-001	LIGHT, LED, amber, 7"	REF
115-1246	LIGHT, LED	REF
115-1246-001	LIGHT, LED stop, turn, tail, red 4"	1
115-1246-002	GROMMET, 4" round	1
115-1247	LIGHT, LED flasher	REF
115-1247-001	LIGHT, LED, flasher, amber 4"	1
115-1246-002	GROMMET, 4" round	1
115-1248	LIGHT, LED	REF
115-1248-001	LIGHT, LED, S/T/T, 6" red oval	1
115-1248-002	GROMMET, 6" oval	1
115-1249	LIGHT, LED	REF
115-1249-001	LIGHT, LED, turn, 6" amber oval	1
115-1248-002	GROMMET, 6" oval	1
115-1269-001	LIGHT, LED, (amber) smart lamp, RH	REF
115-1269-RGT	LIGHT, LED, 4" amber smart lamp, right turn	1
115-0742-002	GROMMET, mount	1
115-1269-002	LIGHT, LED, (amber) smart lamp, LH	REF
115-1269-LFT	LIGHT, LED, 4" amber smart lamp, left turn	1
115-0742-002	GROMMET, mount	1
115-1271	LIGHT, LED, license plate	REF
115-1271-001	LAMP, LED license	1
115-1271-002	BRACKET, LED license plate light	1
115-1272	LIGHT, LED strobe, oval, amber	REF
115-1272-001	LAMP	1
115-1179-002	PLUG	1
115-0869-002	GROMMET	1
115-1278	LIGHT, strobe, clear	REF
115-1232-002	LIGHT, strobe, brush guard	1
115-1278-001	LIGHT, strobe, clear	1

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PART NO.	DESCRIPTION	REQ'D
115-1360	LIGHT, LED, stop, turn/tail (red), 4.00"	REF
115-0742-002	GROMMET, mount	1
115-1360-001	LIGHT, LEG, stop, turn, tail, red, 4"	1
115-1361	LIGHT, LED, back-up (clear) 4.00"	REF
115-0742-002	GROMMET, mount	1
115-1361-001	LIGHT, LED reverse	1
115-1362	LIGHT, LED, clearance, (red) 2-1/2"	REF
115-0760-002	GROMMET, mount	1
115-1362-001	LIGHT, LED, clearance, red 2-1/2"	1
115-1363	LIGHT, LED, mid-turn (amber)	REF
115-0869-002	GROMMET, oval	1
115-1363-001	LIGHT, LED, mid-turn, tail, amber, oval	1
115-1364	LIGHT, LED, stop (red) oval	REF
115-0869-002	GROMMET, oval	1
115-1364-001	LIGHT, LED, stop, red, oval	1
115-1373	LIGHT, LED, clearance (amber)	REF
115-0760-002	GROMMET, mount	1
115-1373-001	LIGHT, LED, clearance, amber, 2/1/2"	1
115-1391	LIGHT, strobe, mini bar, amber	REF
115-1395	LIGHT, LED, mid-body, turn	REF
115-1395-001	LIGHT, LED, mid-body, turn	1
115-0742-002	GROMMET, mount	1
115-1400	LIGHT, LED, flood	REF
115-1402	LIGHT, LED, clearance, red	REF
115-0760-002	GROMMET, mount`	1
115-1402-001	LIGHT, LED, clearance, red	1
115-1403	LIGHT, LED, clearance, amber	REF
115-0760-002	GROMMET, mount	1
115-1403-001	LIGHT, LED, clearance, amber, 2-1/2"	1
115-1407	LIGHT, smart lamp w/grommet	REF
115-0742-002	GROMMET, mount	1
115-1405	LIGHT, smart lamp, 10 diode	1
115-1408	LIGHT, smart lamp w/grommet	REF
115-0742-002	GROMMET, mount	1
115-1406	LIGHT, smart lamp, 10 diode	1

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SECTION 8 THROTTLE, SPEED & TRANSMISSION KITS

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SECTION 9

Body Controller

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60 I/O PLC



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SECTION 9
Body Controller Hardware

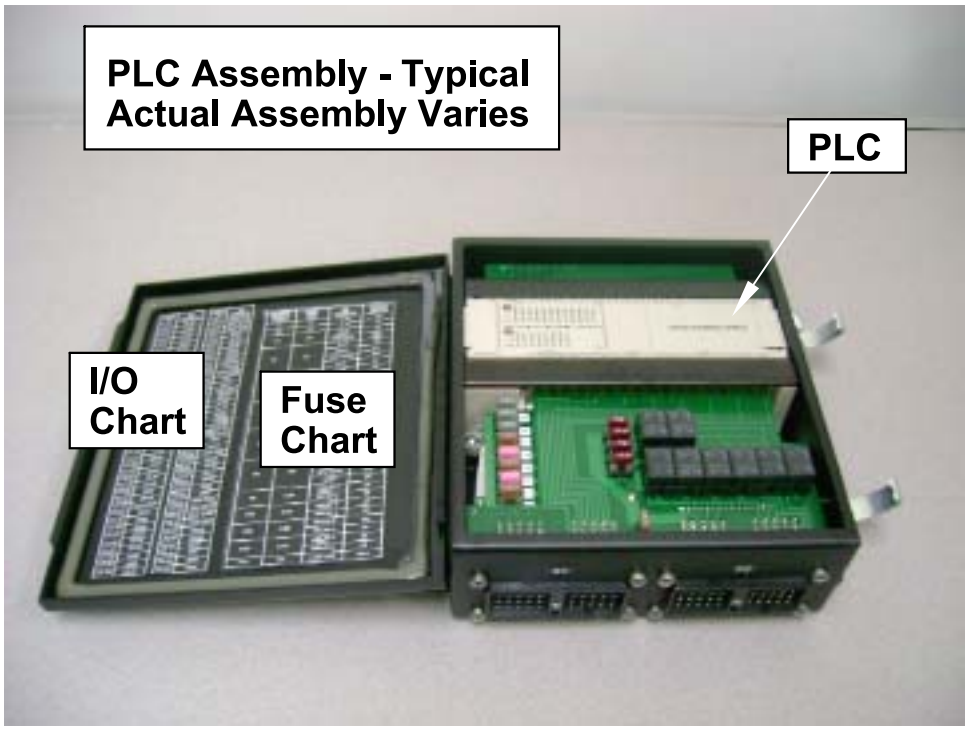
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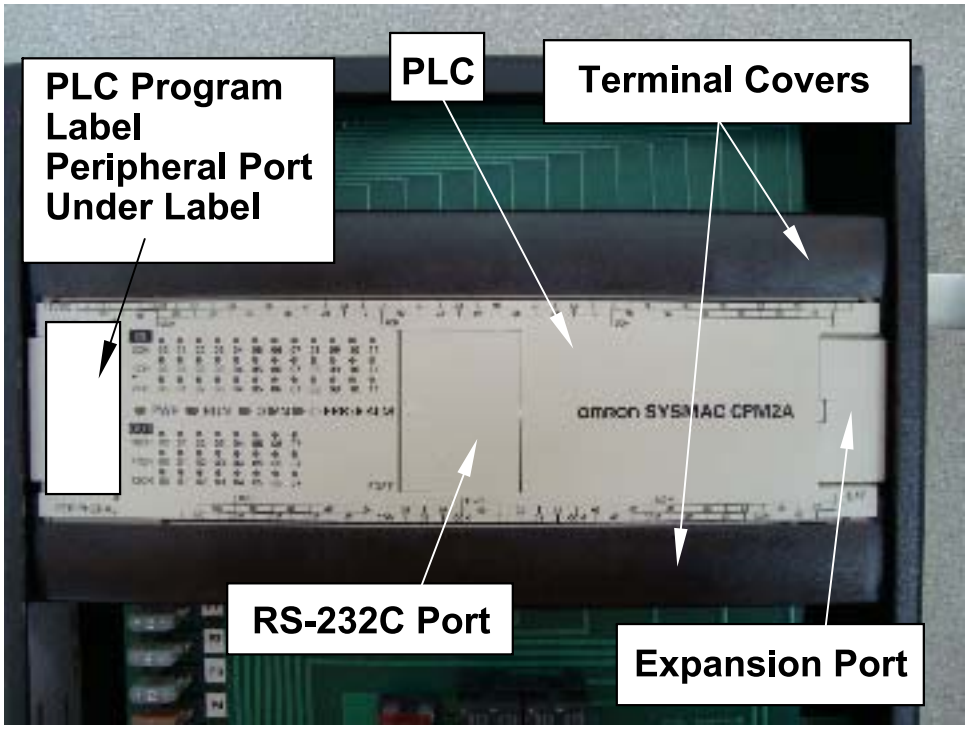
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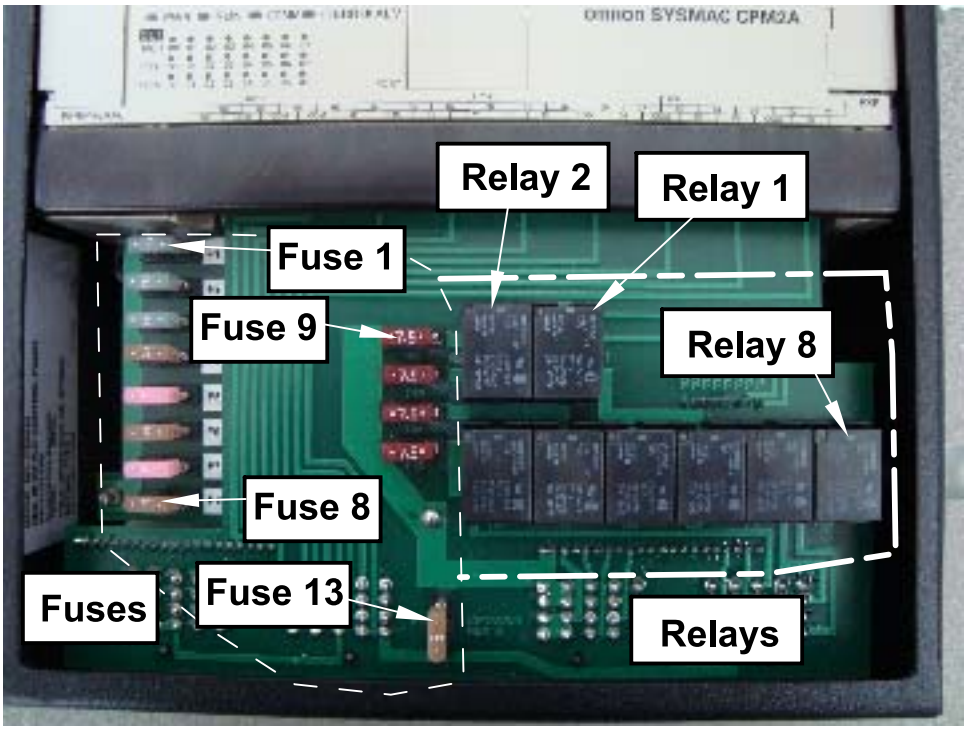
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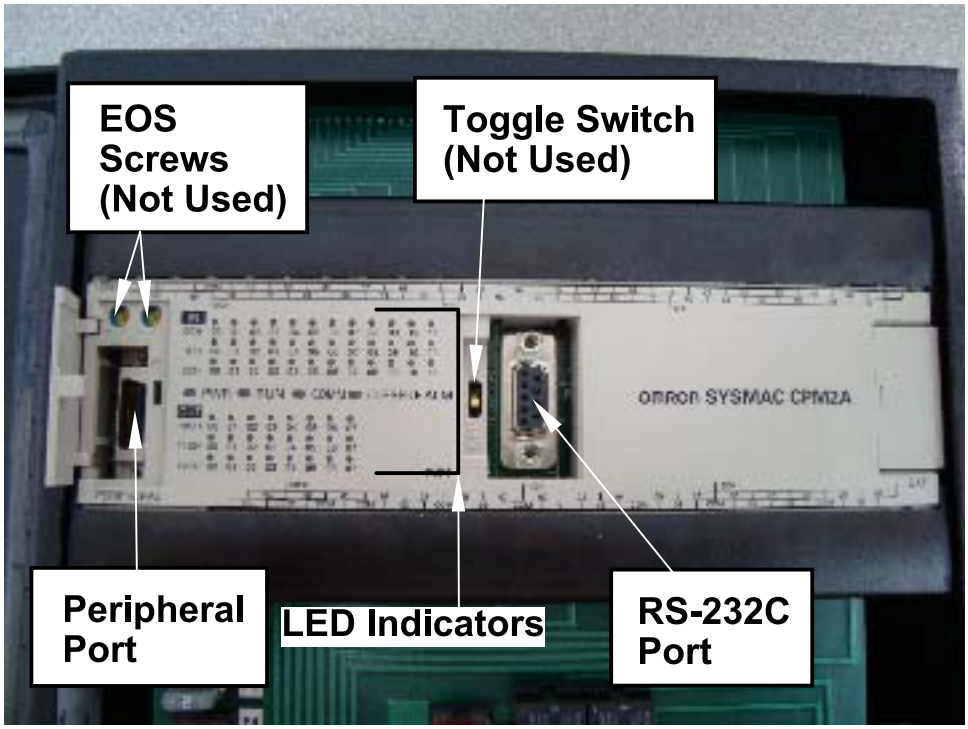




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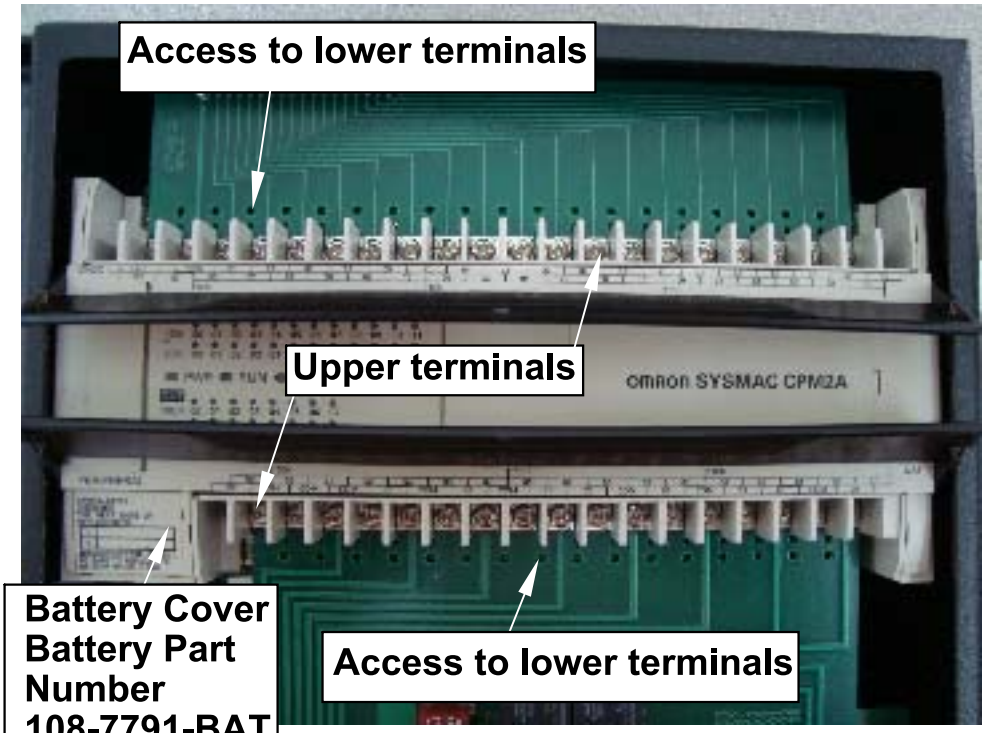
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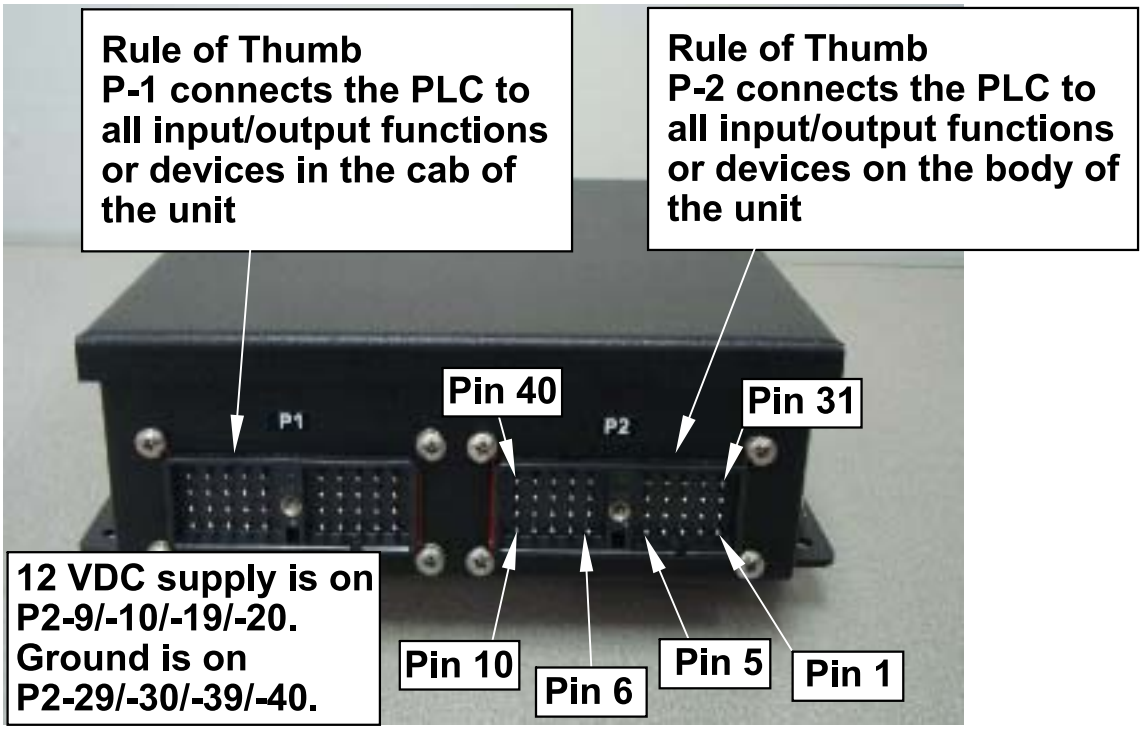




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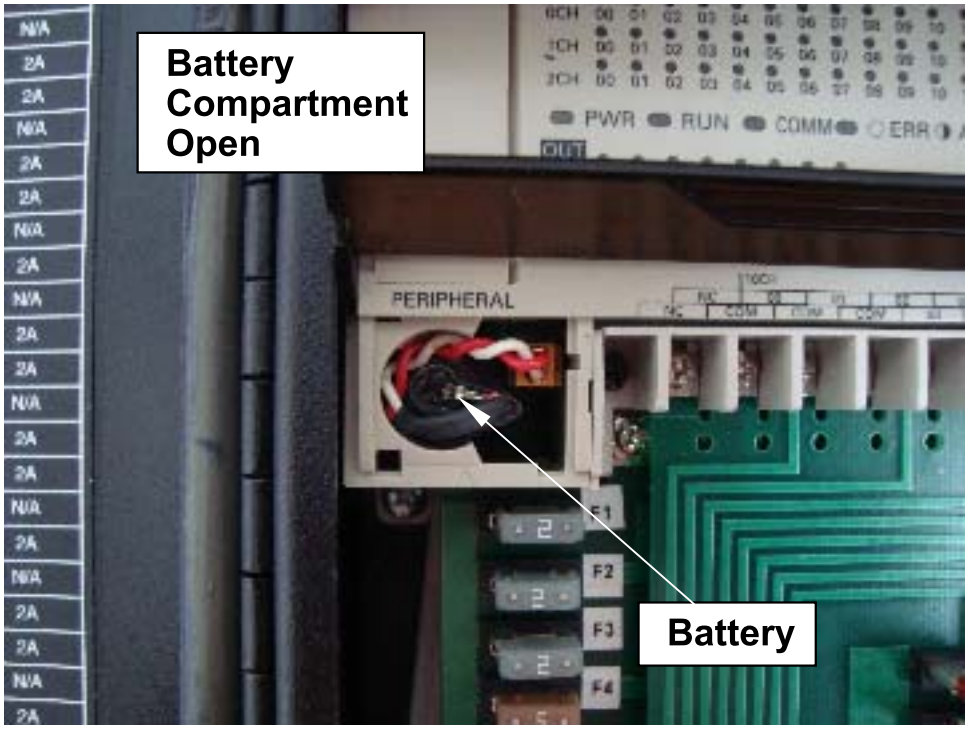
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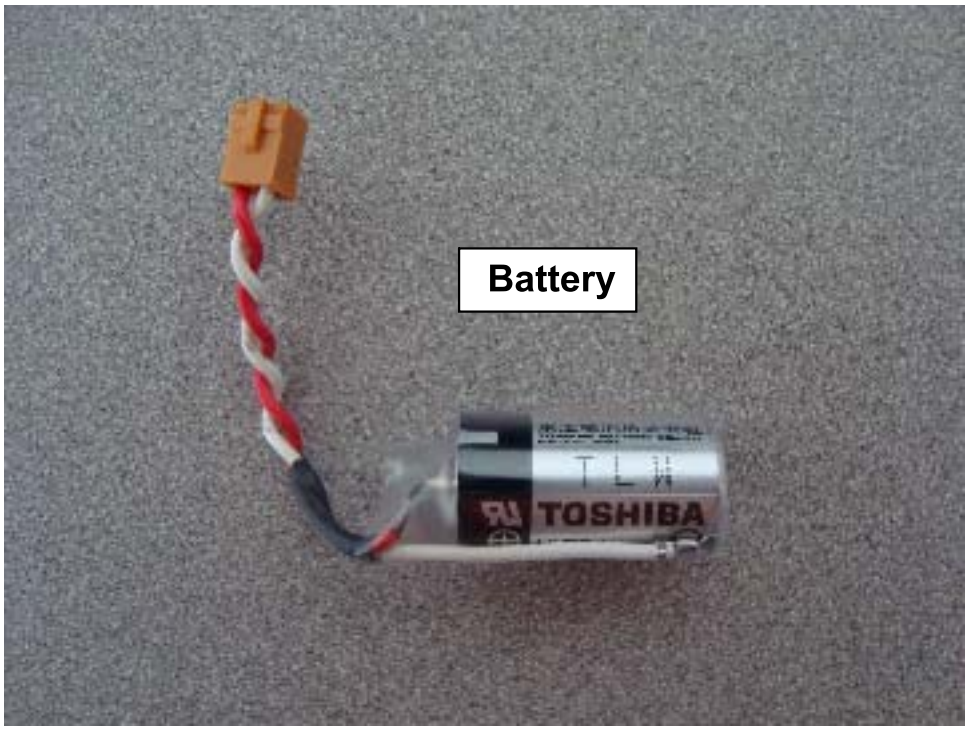




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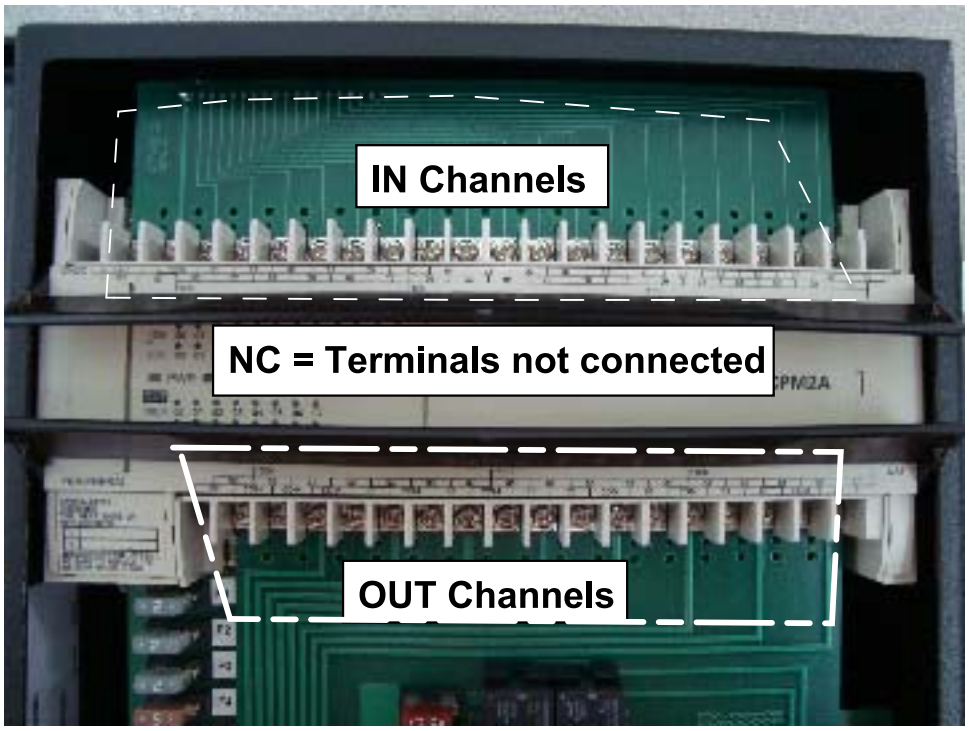
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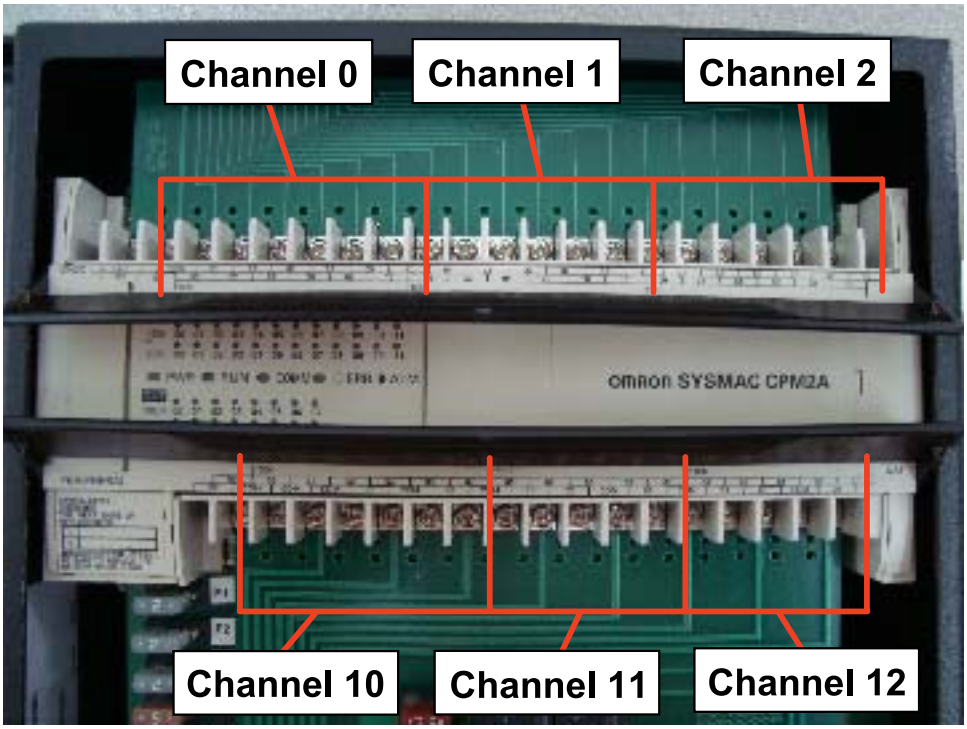




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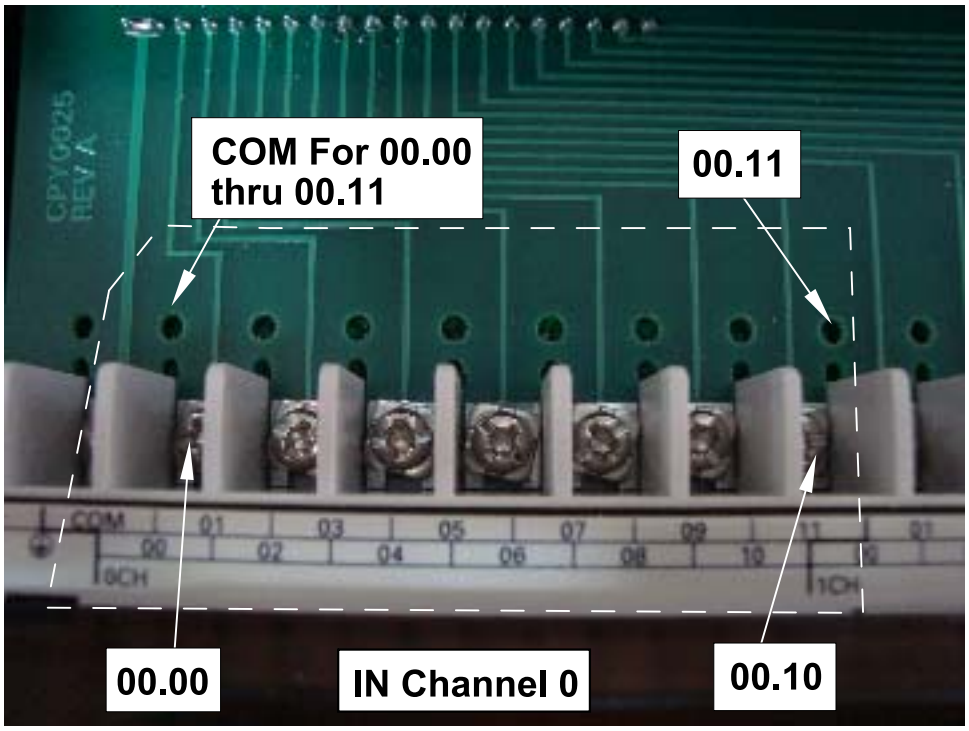
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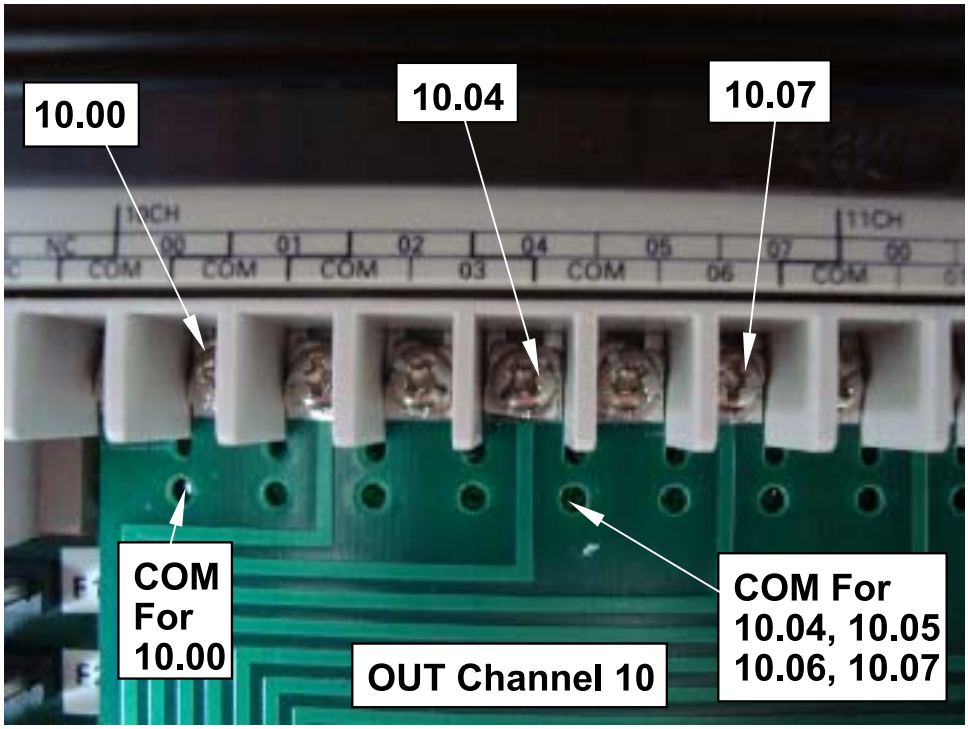




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PLC Battery Replacement

The PLC has a replaceable battery, Part Number 108-7791-BAT. The battery is located under the cover next to the peripheral port. The PLC manufacturer recommends you replace the battery at least every three (3) years. You must complete the replacement of the battery in less than five (5) minutes of starting the procedure to retain the PLC memory, otherwise the memory is erased and you must re-program the PLC.

Fuses and Relays

FUSE NUMBER	FUSE RATING	I/O ADDRESS	OUTPUT RATING	CIRCUIT I.D.
F1	2A	10.00	2A	P1-35
F2	2A	10.01	2A	P1-25
F3	2A	10.02	2A	P1-05
		(R8) 10.03	N/A	N/A
F4	5A	10.04	2A	P1-15
		10.05	2A	P1-34
		(R7) 10.06	N/A	N/A
		10.07	2A	P1-04
F5	4A	11.00	2A	P1-14
		(R6) 11.01	N/A	N/A
		11.02	2A	P1-23
		(R5) 11.03	N/A	N/A
F6	5A	11.04	2A	P1-13
		11.05	2A	P1-03
		(R4) 11.06	N/A	N/A
		11.07	2A	P1-12
F7	4A	12.00	2A	P1-22
		(R3) 12.01	N/A	N/A
		12.02	2A	P1-01
		(R2) 12.03	N/A	N/A
F8	5A	12.04	2A	P1-02
		12.05	2A	P1-11
		(R1) 12.06	N/A	N/A
		12.07	2A	P1-32
F9	7.5A	RELAY#1	4A	P2-33
		RELAY#2	4A	P2-32
F10	7.5A	RELAY#3	4A	P2-31
		RELAY#4	4A	P2-21
F11	7.5A	RELAY#5	4A	P2-11
		RELAY#6	4A	P2-01
F12	7.5A	RELAY#7	4A	P2-02
		RELAY#8	4A	P2-03
F13	5A	12V OUT	4A	COM

There are eight (8) micro relays on the top of the Printed Circuit Board (PCB). The relays provide increased output amperage capacity to certain circuits that require a higher output capacity.

Two fuses are necessary for each relay to function. The first fuse is for the common for the PLC outputs. The other fuse is for the relay's load contacts. A function's output energizes the relay's coil. The relay's output contacts then provide the supply voltage for the function and are protected by another fuse.

The coils in the fuse chart are shown in **()**, for example, **(R1)** represents the coil of Relay 1, etc. **RELAY #1** represents the load contacts of Relay 1 in the fuse chart.

For example:
Relay 1 needs fuses F8 (the coil or **(R1)**) and F9 (load contacts or **RELAY#1**) for proper protection.

Power (12 VDC) enters the PLC through P2-9, P2-10, P2-19 and P2-20. The PLC's ground is through P2-29, P2-30, P2-39 and P2-40.

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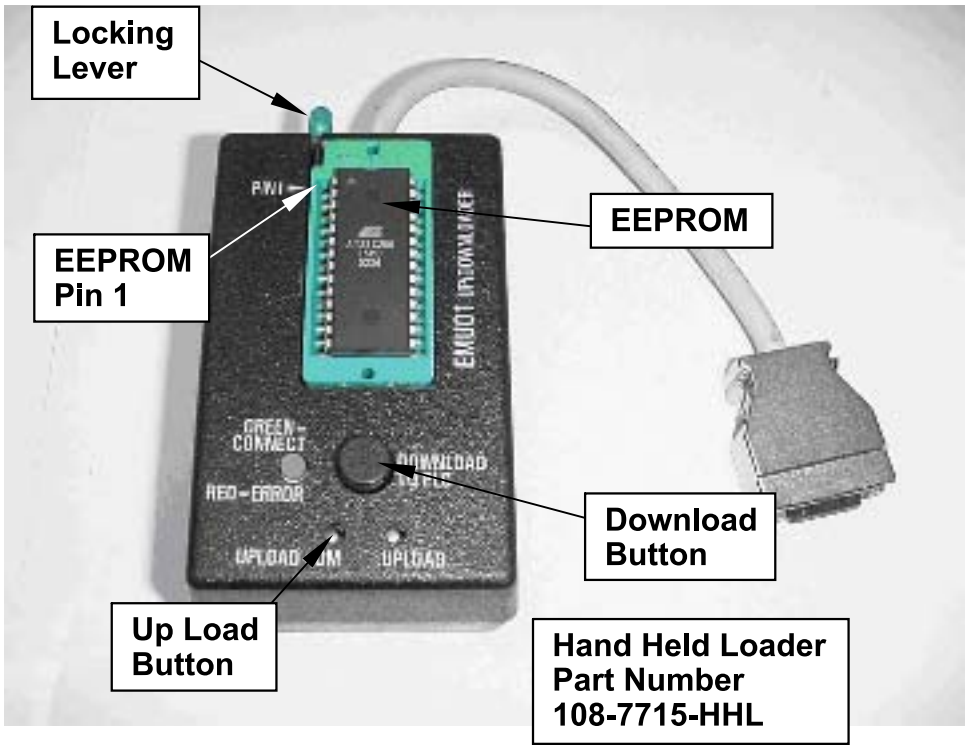
Fuse Replacement

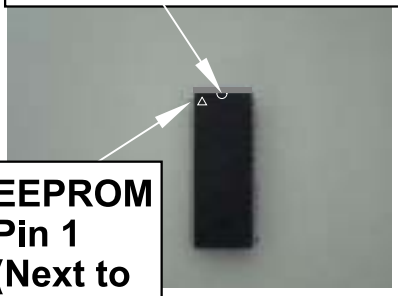
Use the Part Numbers in the following table for replacement of a fuse.

Fuse Replacement Table		
Fuse	**Rating**	**Fuse Part Number (PN)**
F1	2A	108-7112-002
F2	2A	108-7112-002
F3	2A	108-7112-002
F4	4A	108-7112-004
F5	5A	108-7112-005
F6	4A	108-7112-004
F7	4A	108-7112-004
F8	5A	108-7112-005
F9	7.5A	108-7112-007
F10	7.5A	108-7112-007
F11	7.5A	108-7112-007
F12	7.5A	108-7112-007
F13	5A	108-7112-005

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NOTE: Triangle and half-moon highlighted with white



Hand Held Loader Connected to Peripheral Port

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Hand Held Loader Programming Procedures

Downloading Program to PLC

Use the instructions that follow to download a program from an EEPROM in the Hand Held Loader (loader) into the PLC's memory.

1. Make sure you have an EEPROM (PN 108-7715-EEP) with the correct program.
2. Move the loader's locking lever UP.
3. Put the EEPROM in the loader (PN 108-7715-HHL) with the EEPROM's triangle next to the PIN 1 location on the loader.
4. Move the locking lever DOWN and make sure it locks. This secures the EEPROM in the loader.
5. Open the cover for the PLC's Peripheral Port and attach the loader's cable connector to the Peripheral Port.
6. Turn the ignition power ON. The green light on the loader should be ON.
7. Press the DOWNLOAD TO PLC button once and wait for the green light to stop flashing.
8. Turn the ignition power OFF.
9. Wait 5 seconds and turn the ignition power ON again. The green light should be ON.
10. Press the DOWNLOAD TO PLC button again and wait for the green light to stop flashing.
11. Turn the ignition power OFF.
12. Remove the loader's cable from the Peripheral Port and close the Peripheral Port's cover.
13. Program installation is complete.

Uploading Program to Hand Held Loader

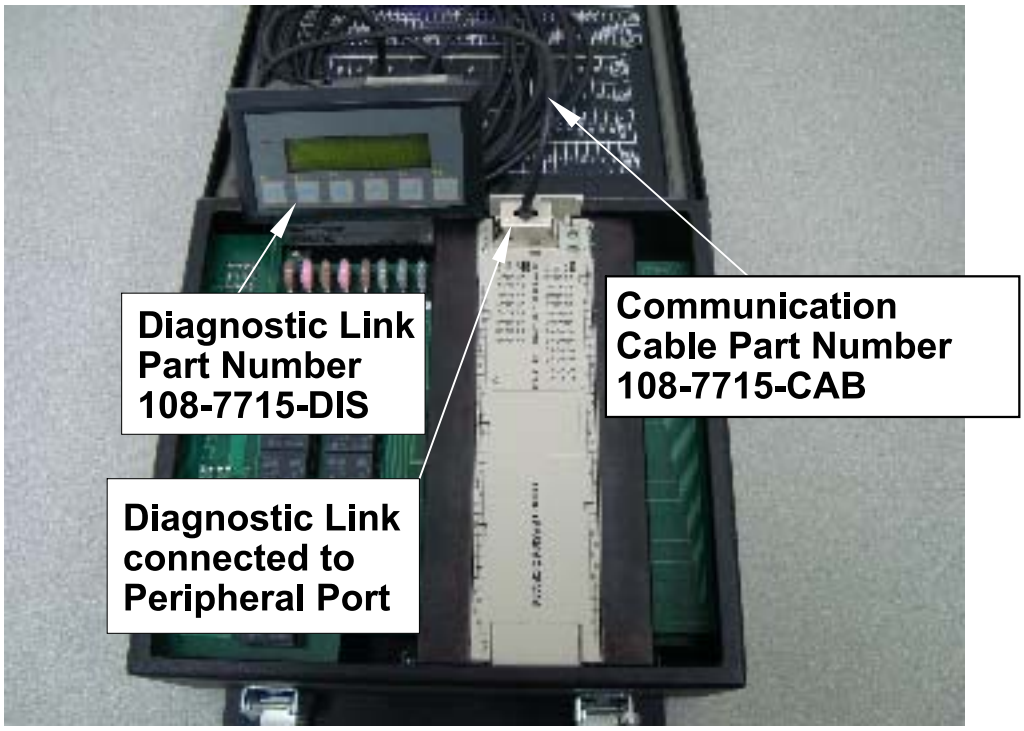
Use the instruction that follow to upload a program from the PLC's memory to an EEPROM in the Hand Held Loader.

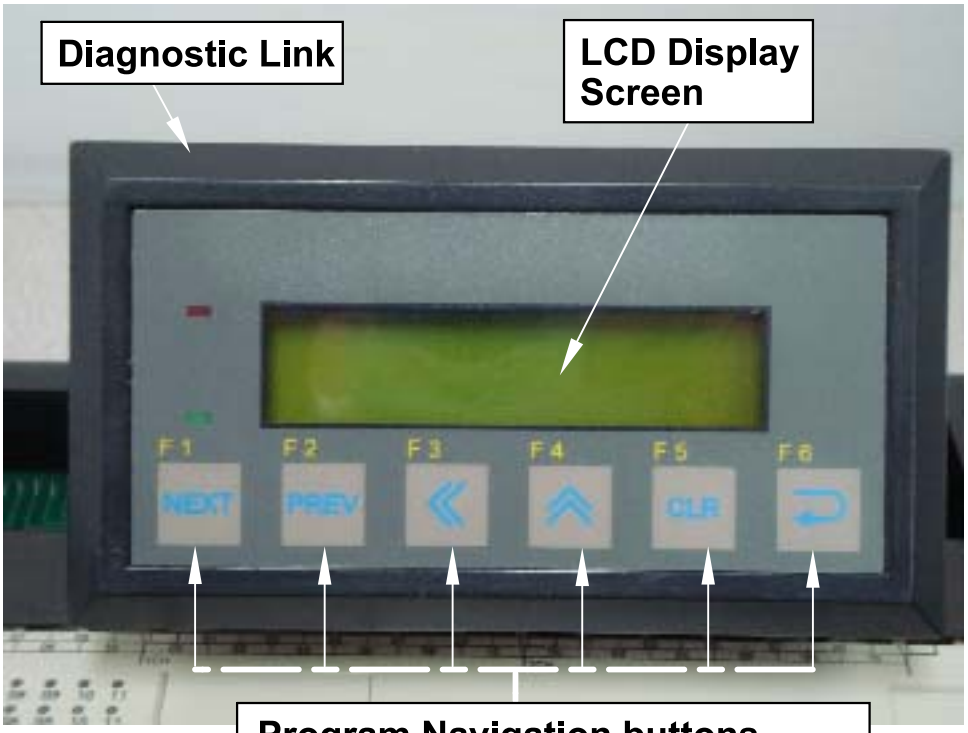
1. Make sure you have a blank EEPROM (PN 108-7715-EEP).
2. Move the loader's locking lever UP.
3. Put the EEPROM in the loader (PN 108-7715-HHL) with the EEPROM's triangle next to the PIN 1 location on the loader.
4. Move the locking lever DOWN and make sure it locks. This secures the EEPROM in the loader.
5. Open the cover for the PLC's Peripheral Port and attach the loader's cable connector to the Peripheral Port.
6. Turn the ignition power ON. The green light on the loader should be ON.
7. Press the UPLOAD + DM button once and wait for the green light to stop flashing.
8. Turn the ignition power OFF.
9. Remove the loader's cable from the Peripheral Port and close the Peripheral Port's cover.
10. The upload of the PLC's program to the loader's EEPROM is complete.

NOTE: There is no memory in the loader without an EEPROM installed in the loader.

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Diagnostic Link

The Diagnostic Link (PN 108-7715-DIS) is a hand-held tool that connects to the PLC's Peripheral Port with a Communication Cable (PN 108-7715-CAB).

Refer to the applicable Body Controller Software manual for the specific instructions for a PLC program.

You use the Diagnostic Link to:

Perform the calibration setup for a newly installed PLC (*password required)*
Monitor input status
Monitor output status
Test output device circuits by forcing outputs to ON
View system parameters
Modify system parameters (*password required)*
View faults
View fault history.

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60 I/O PLC



SERVICE MANUAL

SECTION 9
Body Controller Software Program 109-0242

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SMS9-BCS-SWS-706175-0110

Customer Support

Heil Environmental ▪ 4301 Gault Ave. North . Fort Payne, AL 35967-9984 · 866-275.4345

Section 1: PLC Hardware

1.01: PLC Indicator Lights

Located on the face of the PLC are the PWR, RUN, COMM, and ERR indicator lights.
The PWR indicator should light when the PLC has power.
The Run light indicates that the PLC CPU is in run mode, which is the normal mode of operation.
The COMM indicator will flash during communication between the PLC and other devices.
The ERR light indicates that an error has occurred in the Central Processing Unit (CPU). With this indicator flashing the error is non-fatal and the processor will continue to run. If the indicator is continuous, the error is fatal and the processor will be shutdown. In the event of a fatal error contact the Heil technical support group.

1.02: Inputs

The PLC Inputs are activated by a positive +12 volt signal. All switches proximity, pressure, toggle, push buttons, etc., used as input devices to the PLC, supply a +12 volt signal to a PLC input to turn the input on. With an Input on, a corresponding LED indicator located on the face of the PLC will also be on.

1.03: Outputs

During each cycle the CPU will analyze the status of the inputs, and based upon the logic of the programming, will produce the appropriate +12v DC outputs. With an output on a corresponding LED indicator, located on the face of the PLC, will also be on.

1.04: Communication Ports

There are two communication ports on the face of the PLC, peripheral and RS232. The peripheral port will be the utilized to download user programs via the hand held loader (P/N: 108-7715-HHL). It will also be used to connect the Diagnostic Link.

1.05: Diagnostic Link

The Diagnostic Link is a hand held tool, which can be connected to the PLC through the peripheral port. The Diagnostic Link is not supported with this program.

1.06: Circuit Identification

The input and output circuits are identified by there point of origin at the PLC. Each connector on the PLC assembly is assigned a number P1 and P2. Each wire is also assigned a number representing the connector and pin number of its origin. Example, the wire exiting connector P1 on pin #10 will be identified "P1-10". The circuit identifications are detailed in the table below, as well as on a decal inside the lid of the PLC enclosure.

CONN P1	I/O ADDRESS	CONN P1	I/O ADDRESS
P1-1	12.02	P1-21	12V OUT
P1-2	12.04	P1-22	12.00
P1-3	11.05	P1-23	11.02
P1-4	10.07	P1-24	00.00
P1-5	10.02	P1-25	10.01
P1-6	02.00	P1-26	02.04
P1-7	01.08	P1-27	-
P1-8	01.04	P1-28	01.02
P1-9	01.00	P1-29	GND
P1-10	00.08	P1-30	00.04
P1-11	12.05	P1-31	12V OUT
P1-12	11.07	P1-32	12.07
P1-13	11.04	P1-33	GND
P1-14	11.00	P1-34	10.05
P1-15	10.04	P1-35	10.00
P1-16	02.02	P1-36	02.06
P1-17	01.10	P1-37	02.10
P1-18	01.06	P1-38	GND
P1-19	00.10	P1-39	GND
P1-20	00.06	P1-40	00.02

CONN P2	I/O ADDRESS	CONN P2	I/O ADDRESS
P2-1	11.01 (R6)	P2-21	11.06 (R4)
P2-2	10.06 (R7)	P2-22	-
P2-3	10.03 (R8)	P2-23	-
P2-4	-	P2-24	12V OUT
P2-5	02.01	P2-25	02.03
P2-6	01.03	P2-26	01.07
P2-7	00.09	P2-27	00.11
P2-8	-	P2-28	00.01
P2-9	12V IN	P2-29	GND
P2-10	12V IN	P2-30	GND
P2-11	11.03 (R5)	P2-31	12.01 (R3)
P2-12	-	P2-32	12.03 (R2)
P2-13	-	P2-33	12.06 (R1)
P2-14	12V OUT	P2-34	12V OUT
P2-15	01.11	P2-35	02.05
P2-16	01.05	P2-36	01.09
P2-17	-	P2-37	00.07
P2-18	00.05	P2-38	-
P2-19	12V IN	P2-39	GND
P2-20	12V IN	P2-40	GND

PROGRAM NUMBER 109-0242 PROGRAM RELEASE LEVEL: ND I/O RELEASE LEVEL: ND - ECO: SP08046 PROGRAM NUMBER: 109-0242			RAPID RAIL CO-COLLECTOR STANDARD O.I.G.A.I.
IN-CAB INPUT FUNCTIONS			
A01	CHASSIS SERVICE BRAKE SIGNAL		P1-08 (01.04)
A02	TRANS. TEMP. CIRCUIT		P1-26 (02.04)
A03	SYSTEM POWER SWITCH		P1-16 (02.02)
A04	CHASSIS NEUTRAL SIGNAL		P1-19 (00.10)
A05	CHASSIS TACH. SIGNAL		P1-24 (00.00)
A06	PACKER RIGHT BUTTON		P1-07 (01.08)
A07	PACKER LEFT BUTTON		P1-10 (00.08)
A08	MANUAL PACKER MODE BUTTON		P1-17 (01.10)
A09	LIFT COORDINATED MODE BUTTON		P1-18 (01.06)
A10	GRABBER CLOSE BUTTON		P1-06 (02.00)
A11	GRABBER OPEN BUTTON		P1-09 (01.00)
A12	UNDUMP BUTTON		P1-20 (00.06)
A13	LOADER IN BUTTON		P1-37 (02.10)
A14	LOADER OUT BUTTON		P1-40 (00.02)
A15	LOADER UP BUTTON		P2-18 (00.05)
A16	LOADER DOWN BUTTON		P2-23 (02.11)
A17	LOADER DUMP BUTTON		P2-25 (02.03)
IN-CAB OUTPUT FUNCTIONS			
B01	FILTER BYPASS INDICATOR		P1-02 (12.04)
B02	IN-CAB ALARM		P1-22 (12.00)
B03	LOADER PUMP (PUMP #1)		P1-23 (11.02)
B04	BODY PUMP (PUMP #2)		P1-35 (10.00)
B05	PACK LEFT INDICATOR		P1-05 (10.02)
B06	PACK RIGHT INDICATOR		P1-12 (11.07)
B07	BODY/TAILGATE INDICATOR		P1-11 (12.05)
B08	PACKER PRESSURE SWITCH INDICATOR		P1-15 (10.04)
B09	CHIME		P1-25 (10.01)
B10	TRANS TEMP INDICATOR		P1-32 (12.07)
BODY INPUT FUNCTIONS			
C01	BODY/TAILGATE RAISED ALARM		P2-07 (00.09)
C02	LOADER IN PROXIMITY SWITCH		P2-37 (00.07)
C03	LOADER DUMP PROXIMITY SWITCH		P2-27 (00.11)
C04	PACKER PRESSURE SWITCH		P2-08 (00.03)
C05	REVERSE SIGNAL		P2-04 (02.07)
C06	PACKER PROXIMITY SWITCH		P2-05 (02.01)
C07	FILTER PRESSURE SWITCH		P2-26 (01.07)

C08	LOADER UNDUMP PROXIMITY SWITCH		P2-35 (02.05)
C09	LOADER UP PROXIMITY SWITCH		P2-06 (01.03)
C10	GRABBER OPEN PROXIMITY SWITCH		P2-13 (02.09)
BODY OUTPUT FUNCTIONS			
D01	GRABBER CLOSE SOLENOID		P1-04 (10.07)
D02	GRABBER OPEN SOELNOID		P1-13 (11.04)
D03	LOADER IN SOLENOID		P2-33 (12.06)
D04	LOADER OUT SOLENOID		P2-11 (11.03)
D05	LOADER UP SOLENOID		P2-32 (12.03)
D06	LOADER DOWN SOLENOID		P2-31 (12.01)
D07	LOADER DUMP SOLENOID		P2-21 (11.06)
D08	LOADER UNDUMP SOLENOID		P2-03 (10.03)
D09	PACKER RIGHT SOLENOID		P1-01 (12.02)
D10	PACKER LEFT SOLENOID		P1-14 (11.00)
D11	LOADER LATCH		P2-02 (10.06)
D12	REVERSE FLOOD LIGHTS		P2-01 (11.01)
OPTION IN-CAB INPUT FUNCTIONS			
E1	AUTO-NEUTRAL ENABLE SWITCH		P1-30 (00.04)
OPTION IN-CAB OUTPUT FUNCTIONS			
F1	ALLISON WIRES 142/117		P1-03 (11.05)
F2	ALLISON WIRE 162		P1-34 (10.05)
OPTION BODY INPUT FUNCTIONS			
G01	LOW ENGINE TORQUE PRESSURE SWITCH		P2-16 (01.05)
OPEN BODY OUTPUT			
N/A	NONE		NONE
OPEN BODY INPUTS			
N/A	SPARE BODY INPUT		P2-36 (01.09)
N/A	SPARE BODY INPUT		P2-15 (01.11)
N/A	SPARE BODY INPUT		P2-17 (01.01)
N/A	SPARE BODY INPUT (LOADER)		P2-28 (00.01)
OPEN IN-CAB OUTPUTS			
N/A	NONE		NONE
OPEN IN-CAB INPUTS			
N/A	SPARE IN-CAB INPUT		P1-27 (02.08)
N/A	SPARE IN-CAB INPUT		P1-28 (01.02)
N/A	SPARE IN-CAB INPUT		P1-36 (02.06)

1.07: PLC Fusing

The PLC is equipped with multiple fuses located on circuit boards in the PLC enclosure. These fuses are detailed in the chart below as well as on the fuse decal inside the lid of the PLC enclosure. The fuse numbers are etched into the printed circuit board at each fuse location.

FUSE NUMBER	FUSE RATTING	I/O ADDRESS	OUTPUT RATTING	CIRCUIT I.D.
F1	2A	10.00	2A	P1-35
F2	2A	10.01	2A	P1-25
F3	2A	10.02	2A	P1-05
		10.03	N/A	P2-03
F4	4A	10.04	2A	P1-15
		(R5) 10.05	N/A	P1-34
		10.06	2A	P2-02
		(R1) 10.07	N/A	P1-04
F5	5A	11.00	2A	P1-14
		11.01	2A	P2-01
		(R2) 11.02	N/A	P1-23
		11.03	2A	P2-11
F6	4A	11.04	2A	P1-13
		(R3) 11.05	N/A	P1-03
		11.06	2A	P2-21
		(R4) 11.07	N/A	P1-12
F7	4A	12.00	2A	P1-22
		12.02	2A	P1-01
F8	5A	12.04	2A	P1-02
		12.05	2A	P1-11
F9	8A	RELAY#1	4A	N/A
		RELAY#2	4A	N/A

FUSE NUMBER	FUSE RATTING	I/O ADDRESS	OUTPUT RATTING	CIRCUIT I.D.
F10	8A	RELAY#3	4A	N/A
		RELAY#4	4A	N/A
F11	8A	RELAY#5	4A	N/A
		RELAY#6	4A	N/A
F12	8A	RELAY#7	4A	N/A
		RELAY#8	4A	N/A
F13	5A	12V OUT	4A/5	N/A

Section 2: PLC Calibration Setup

When installing a PLC it will be necessary to complete the calibration setup procedure, detailed in this section.

2.01: Engine Idle Calibration

The engine idle calibration can be performed by two methods. The first method is through the diagnostic link. This method requires the engine to be at idle speed during calibration, and is performed by simply scrolling the engine idle speed set point to match the actual engine idle speed. Upon completion, verify the calibration by comparing the engine RPM to the chassis tachometer reading.

Requires the engine speed to be at 1000 RPM during calibration, and is performed as follows:

a. Turn the System Power Switch Off
b. Press and hold the Loader Down and Pack Left buttons for ten seconds or until the in-cab alarm begins to sound.
c. Verify the calibration by checking the pump overspeed with the chassis tachometer reading.

Section 3: Default Parameters

3.01 Program 109-0242 Parameter Defaults

Parameter	Default Setting
A. Max Engage Speed (Pump 1, Loader)-	800 RPM
B. Max Operating Speed (Pump 1)-------	900 RPM
C. Max Engage Speed (Pump 2, Body)--	1700 RPM
D. Max Operating Speed (Pump 2)-------	1800 RPM
E. Start Filter Warning ----------	5 Hours
F. Start Filter Shutdown ----------	6 Hours
G. Grabber Close Time ----------	1.2 Seconds

Section 4: I/O Functions

The following sheets detail the functionality as well as provide circuit diagrams for each of the input and output function provided through the PLC.

4.01: Standard In-Cab Input Functions

A01 Input Function – Chassis Service Brake (In Cab Input 01.04)

This circuit monitors the on/off status of the chassis service brake.

Function Logic

Input Device	Channel	LED Lamp	LED Status
A. Chassis Service Brake	1	04	ON (when brake applied)

Note: Reference function B03, B09, D11, F1, and F2 for **LED Status** conditions during pump/chime operation.

A02 Input Function – Transmission Temp Signal (In Cab Input 02.04)

This circuit uses two methods to monitor the transmission fluid temperature.
The first method uses a temperature switch with a 305°F set point. This switch is plumbed into the converter out transmission fluid line. The second method uses a relay to monitor the transmission temperature warning indicator output from the Allison ECU. This ECU output normally turns on when the transmission sump fluid temperature reaches 250°F.

Function Logic

Input Device	Channel	LED Lamp	LED Status
A. Trans Temp Relay	02	04	See Note

Note: Reference function B10 for **LED Status** conditions during system operation.

A03 Input Function – System Power/E Stop Switch (In Cab Input 02.02)

This circuit monitors the on/off status of the system power/E Stop switch.

Function Logic

Input Device	Channel	LED Lamp	LED Status
A. System Power Switch	2	02	ON

A04 Input Function – Transmission Neutral Signal (In Cab Input 00.10)

This circuit monitors the transmission neutral signal.

Default Parameters	Default Setting
None	N/A

Function Logic

Input Device	Channel	LED Lamp	LED Status
A. Chassis Transmission	0	10	ON (Neutral Applied)

Note: Reference functions B03, B09, B10, D11, F1, and F2 for **LED Status** conditions during system operation.

A05 Input Function – Chassis Alternator Signal (In Cab Input 00.00)

This circuit monitors the signal generated by the alternator "R" Stator. This signal is typically a -1.4V to +15V square wave, of which the frequency varies relative to engine speed. The PLC uses the Engine Idle, "Tach. Hz/2 at Engine Idle" and "Tach. Hz/2" parameters to form a proportional equation of which the result is engine RPM. This equation is executed every ½ second. Note: The pulse may be too fast to see on the PLC.

Default Parameters	Default Setting
Engine Idle ----------	700

Function Logic

Input Device	Channel	LED Lamp	LED Status
"R" Stator Pulse	0	00	ON
"R" Stator Pulse	0	00	OFF

A06 Input Function – Packer Right Rocker Switch (In Cab Input 01.08)

This circuit monitors the on/off status of the Pack Right rocker switch.

Function Logic

Input Device	Channel	LED Lamp	LED Status
A. Pack Right Rocker Switch	1	08	ON (momentary)

Note: Reference function D09 for **LED Status** conditions during packer operation.

A07 Input Function – Pack Left Rocker Switch (In Cab Input 00.08)

This circuit monitors the on/off status of the Pack Left rocker switch.

Function Logic

Input Device	Channel	LED Lamp	LED Status
A. Pack Left Rocker Switch	0	08	ON (momentary)

Note: Reference function D10 for **LED Status** conditions during pack operation. The LED will also be lit during the PLC Calibration routine.

A08 Input Function – Manual Pack Mode Selector (In Cab Input 01.10)

This circuit monitors the on/off status of the Manual Pack Mode rocker switch.

Function Logic

Input Device	Channel	LED Lamp	LED Status
A. Manual Pack Mode Rocker Sw.	1	10	ON

Note: Reference functions D09 and D10 for **LED Status** conditions during pack operation. This switch places the packer in manual mode when the LED is ON.

A09 Input Function – Lift Coordinated Mode Rocker Swtich (In Cab Input 01.06)

This circuit monitors the on/off status of the Lift Coordinated Mode rocker switch.

Function Logic

Input Device	Channel	LED Lamp	LED Status
A. Lift Coordinated Mode Rocker Sw.	01	06	ON

Note: Reference functions D01, D02, D03, D04, D05, D06, D07, and D08 for **LED Status** conditions during system operation. This switch places the lift controls in coordinated mode when the LED is ON.

A10 Input Function – Loader Grip Rocker Switch (In Cab Input 02.00)

This circuit monitors the on/off status of the Loader Grip rocker switch.

Function Logic

Input Device	Channel	LED Lamp	LED Status
A. Loader Grip Rocker Switch	2	00	ON (momentary)

Note: Reference functions D01, D02, D03, D05, and D07 for **LED Status** conditions during lift operation.

A11 Input Function – Loader Release Rocker Switch (In Cab Input 01.00)

This circuit monitors the on/off status of the Loader Release rocker switch.

Function Logic

Input Device	Channel	LED Lamp	LED Status
A. Loader Release Rocker Switch	1	00	ON (momentary)

Note: Reference functions B03, D01, D02, and D03 for **LED Status** conditions during lift operation.

A12 Input Function – Loader Undump Rocker Switch (In Cab Input 0.06)

This circuit monitors the on/off status of the Loader Undump rocker switch.

Function Logic

Input Device	Channel	LED Lamp	LED Status
A. Loader Undump Rocker Switch	0	06	ON (momentary)

Note: Reference functions D06 and D08 for **LED Status** conditions during lift operation.

A13 Input Function – Loader In Rocker Switch (In Cab Input 02.10)

This circuit monitors the on/off status of the Loader In rocker switch.

Function Logic

Input Device	Channel	LED Lamp	LED Status
A. Loader In Rocker Switch	2	10	ON (momentary)

Note: Reference functions D03 for **LED Status** conditions during lift operation.

A14 Input Function – Loader Out Rocker Switch (In Cab Input 00.02)

This circuit monitors the on/off status of the Loader Out rocker switch.

Function Logic

Input Device	Channel	LED Lamp	LED Status
A. Loader Out Rocker Switch	0	02	ON (momentary)

Note: Reference function D04 for **LED Status** conditions during lift operation.

A15 Input Function – Loader Up Rocker Switch (In Cab Input 00.05)

This circuit monitors the on/off status of the Loader Out rocker switch.

Function Logic

Input Device	Channel	LED Lamp	LED Status
A. Loader Out Rocker Switch	0	05	ON (momentary)

Note: Reference function D05 for **LED Status** conditions during lift operation.

A16 Input Function – Loader Down Rocker Switch (In Cab Input 02.11)

This circuit monitors the on/off status of the Loader Down rocker switch.

Function Logic

Input Device	Channel	LED Lamp	LED Status
A. Loader Down Rocker Switch	2	11	ON (momentary)

Note: Reference function D06 for **LED Status** conditions during lift operation.

A17 Input Function – Loader Dump Rocker Switch (In Cab Input 02.03)

This circuit monitors the on/off status of the Loader Dump rocker switch.

Function Logic

Input Device	Channel	LED Lamp	LED Status
A. Loader Dump Rocker Switch	2	03	ON (momentary)

Note: Reference function D07 for **LED Status** conditions during lift operation.

B01 Output Function -- Filter Bypass Indicator (In Cab Output 12.04)

This output function controls the filter bypass indicator. Activation of this light indicates that the filter is or has been in bypass, within the past fifteen minutes. This indicator will flash, once for each accumulated hour of operation with the filter in bypass, then pause for approximately 3 seconds. Once the accumulated time has reached the "Start Filter Warning" time the indicator will become continuous. Once the accumulated time reaches the "Start Filter Shutdown" time Fault #32 will be set, the hydraulic pump will be disengaged and the indicator will flash continuously. Under this condition, the pump will only be allowed to operate in 3-minute intervals. Turning the System Power Switch off then on again will reset the 3-minute time interval. The pump will continue to operate in this fault mode until the hydraulic filter has been serviced and is no longer bypassing oil.

Default Parameters	Default Setting
A. Start Filter Warning	5 Hours
B. Start Filter Shutdown Warning	6 Hours

Conditions Necessary to activate the circuit

Function or Component	Channel	LED Lamp	Led Status
B. System Power Switch	2	02	ON
C. and Hydraulic Pump	11	02	ON
D. and Filter Pressure Switch	1	07	OFF
E. Filter Bypass Indicator	12	04	ON

Note: These conditions indicate that the filter is in bypass. Each time this condition occurs the indicator will continue the flash sequence for 15 minutes after bypass conditions have subsided. Under cold weather conditions, the hydraulic filter may go into bypass when low oil temperatures create a high oil viscosity. This will subside when the hydraulic system reaches operating temperature.

B02 Output Function – In-Cab Alarm (In Cab Output 12.00)

This output function controls the cab alarm circuit.

Default Parameters	Default Setting
A. None	N/A

Conditions Necessary to activate the circuit

Function or Component	Channel	LED Lamp	LED Status
A. Critical Fault	N/A	N/A	N/A
B. or System Fault	N/A	N/A	N/A
C. or Body/Tailgate Alarm	0	09	OFF
D. In-Cab Alarm	12	00	ON

Note: With either (A, B, or C) true, will activate the In-Cab Alarm (D).

B03 Output Function – Hydraulic Pump, Loader – P1 (In Cab Output 11.02)

This output function controls the hydraulic pump for the loader. Circuit will engage the pump upon activation of the chassis service brake or transmission neutral signal or upon pressing the Grabber Open push button.

Default Parameters	Default Setting
A. Pump Max. Engage Speed	800 RPM
B. Pump Max. Operate Speed	900 RPM

Conditions Necessary to activate the circuit

Function or Component	Channel	LED Lamp	LED Status	
A. System Power Switch	2	02	ON	
B. Chassis Service Brake	1	04	ON	(momentary)
C. or Chassis Neutral Signal	0	10	ON	
D. or Grabber Open PB	1	00	ON	(momentary)
E. Hydraulic Pump	11	02	ON	

Note: With condition A true, condition B, C, or D will operate pump (E) within the RPM range indicated.

B04 Output Function – Hydraulic Pump, Body/Packer – P2 (In Cab Output 10.00)

This output function controls the hydraulic pump for the body functions. Circuit will engage when the engine speed is in the range indicated.

Default Parameters	Default Setting
A. Pump Max. Engage Speed	1700 RPM
B. Pump Max. Operate Speed	1800 RPM

Conditions Necessary to activate the circuit

Function or Component	Channel	LED Lamp	LED Status
A. System Power Switch	2	02	ON
B. Low Engine Torque PSW (Optional)	1	05	OFF
C. Hydraulic Pump	10	00	ON

Note: With conditions (A and B) true the pump (C) will operate within the RPM range indicated.

B05 Output Function – Packer Left Indicator (In Cab Output 10.02)

This output function controls the indicator lamp that indicates that the packer is on the left side of the body or has started movement towards the left side of the body.

Default Parameters	Default Setting
A. None	N/A

Conditions Necessary to activate the circuit

Function or Component	Channel	LED Lamp	LED Status
A. Pack Left Solenoid	11	00	ON
B. Pack Left Indicator	10	02	ON

Note: When the packer has been moved to the left (street) side of the body this LED will be on. The LED will light as soon as the packer starts moving towards the left so it is possible for the LED to be lit and the packer to be on the right side of the body if the packer is stopped shortly after starting movement.

B06 Output Function – Packer Right Indicator (In Cab Output 11.07)

This output function controls the indicator lamp that indicates that the packer is on the right side of the body or has started movement towards the right side of the body.

Default Parameters	Default Setting
A. None	N/A

Conditions Necessary to activate the circuit

Function or Component	Channel	LED Lamp	LED Status
A. Pack Right Solenoid	12	02	ON
B. Pack Right Indicator	11	07	ON

Note: When the packer has been moved to the right (curb) side of the body this LED will be on. The LED will light as soon as the packer starts moving towards the right so it is possible for the LED to be lit and the packer be on the left side of the body if the packer is stopped shortly after starting movement.

B07 Output Function – Body/Tailgate Indicator (In Cab Output 12.05)

This output function controls the Body/Tailgate Indicator circuit.

Default Parameters	Default Setting
A. None	N/A

Conditions Necessary to activate the circuit

Function or Component	Channel	LED Lamp	LED Status
A. Body/Tailgate Alarm	0	09	ON
B. Body/Tailgate Indicator	12	05	ON

Note: With condition (A) true the Body/Tailgate Indicator (B) will activate.

B08 Output Function – Packer Pressure Switch Indicator (In Cab Output 10.04)

This output function controls the Packer Pressure Switch indicator.

Default Parameters	Default Setting
A. None	N/A

Conditions Necessary to activate the circuit

Function or Component	Channel	LED Lamp	LED Status
A. Packer Pressure Switch	0	03	ON
B. Packer Pressure Switch Indicator	10	04	ON

Note: With condition (A) true, the Packer Pressure Switch (B) will activate.

B09 Output Function – In-Cab Chime (In Cab Output 10.01)

This output function controls In-Cab Chime.

Default Parameters	Default Setting
None	N/A

Conditions Necessary to activate the circuit

Function or Component	Channel	LED Lamp	LED Status
A. Body/Tailgate Alarm	0	09	ON
B. Loader In Prox	0	07	OFF
C. or Gripper Fully Release Prox	2	09	OFF
D. Chassis Neutral Signal	0	10	OFF
E. Chassis Service Brake	1	04	OFF
F. In-Cab Chime	10	01	ON

Note: With condition (A) true or conditions (B or C and D and E) true, the In-Cab Chime circuit (F) will activate.

B10 Output Function – Transmission Temperature Indicator (In Cab Output 12.07)

This output function controls the transmission indicator light

Default Parameters	Default Setting
A. None	N/A

Conditions Necessary to activate the circuit

Function or Component	Channel	LED Lamp	LED Status
A. Trans Temp Relay	2	04	OFF
B. Trans Temp Indicator	12	07	ON

Note: With condition (A) true, the indicator (B) will flash, once per second, when Fault #31 is set. This indicates the transmission fluid temperature has exceeded a safe operating range.

4.03: Standard Body Input Functions

C01 Input Function – Body/Tailgate Raised Alarm Proximity Switch (Body Input 00.09)

This circuit monitors the on/off status of the Body/Tailgate Raised proximity switch.

Function Logic

Input Device	Channel	LED Lamp	LED Status
A. Body/Tailgate Alarm	0	09	See Note

Note: Reference functions B02, B07 and B09 for **LED Status** conditions.

C02 Input Function – Loader In Proximity Switch (Body Input 00.07)

This circuit monitors the on/off status of the Loader In proximity switch.

Function Logic

Input Device	Channel	LED Lamp	LED Status
A. Loader In Proximity Switch	0	07	See Note

Note: Reference functions B09 and D03 for **LED Status** conditions.

C03 Input Function – Loader Dump Proximity Switch (Body Input 00.11)

This circuit monitors the on/off status of the Loader Dump Proximity Switch.

Function Logic

Input Device	Channel	LED Lamp	LED Status
A. Loader Dump Prox. Sw.	0	11	See Note

Note: Reference functions D02 and D07 for **LED Status** conditions during operation.

C04 Input Function – Packer Pressure Switch (Body Input 00.03)

This circuit monitors the on/off status of the packer pressure switch.

Function Logic

Input Device	Channel	LED Lamp	LED Status
A. Packer Pressure Switch	0	03	See Note

Note: Reference functions B08, D09, and D10 for **LED Status** conditions during operation.

C05 Input Function – Chassis Reverse Signal (Body Input 02.07)

This circuit monitors the on/off status of the Chassis Reverse signal.

Function Logic

Input Device	Channel	LED Lamp	LED Status
A. Chassis Reverse Signal	2	07	See Note

Note: Reference function D12 for **LED Status** conditions during operation.

C06 Input Function – Packer Proximity Switch (Body Input 02.01)

This circuit monitors the on/off status of the Packer proximity switch.

Function Logic

Input Device	Channel	LED Lamp	LED Status
A. Packer Proximity Switch	2	01	See Note

Note: Reference functions D09 and D10 for **LED Status** conditions during operation.

C07 Input Function – Filter Pressure Switch (Body Input 01.07)

This circuit monitors the on/off status of the filter pressure switch.

Function Logic

Input Device	Channel	LED Lamp	LED Status
A. Filter Pressure Switch	1	07	See Note

Note: Reference function B01 for **LED Status** conditions during operation.

C08 Input Function – Loader Undump Proximity Switch (Body Input 02.05)

This circuit monitors the on/off status of the loader undump proximity switch.

Function Logic

Input Device	Channel	LED Lamp	LED Status
A. Loader Undump Prox Switch	2	05	See Note

Note: Reference function D08 for **LED Status** conditions during operation.

C09 Input Function – Loader Up Proximity Switch (Body Input 01.03)

This circuit monitors the on/off status of the loader up proximity switch.

Function Logic

Input Device	Channel	LED Lamp	LED Status
A. Loader Up Prox Switch	1	03	See Note

Note: Reference function D05 for **LED Status** conditions during operation.

C10 Input Function – Gripper Fully Open Proximity Switch (Body Input 02.09)

This circuit monitors the on/off status of the Gripper Fully Open proximity switch.

Function Logic

Input Device	Channel	LED Lamp	LED Status
A. Gripper Fully Open Prox Switch	2	09	See Note

Note: Reference functions B09 and D05 for **LED Status** conditions during operation.

D01 Output Function – Gripper Close Output (Body Output 10.07)

This output function controls the Gripper Close Output. This output will close the grabbers by activating either a solenoid or a relay depending on the control package ordered.

Default Parameters	Default Setting
A. Gripper Close Time	1.2 sec. (See Note)

Conditions Necessary to activate the circuit

Function or Component	Channel	LED Lamp	LED Status
A. System Power/E Stop	2	02	ON
B. Lift Coordinated Mode Rocker Sw.	1	06	(See Note)
C. Gripper Close Rocker Switch	2	00	ON
D. Gripper Open Rocker Switch	1	00	OFF
E. Hydraulic Pump, Loader, P1	11	02	ON
F. Finesse Valve Input (option)	02	08	(See Note)
G. Grabber Close Output	10	07	ON

Note: With condition (A) true and condition (B) OFF, condition (C, D, and E) will activate the Gripper Close Output (G). With condition (A) true, and condition (B) ON, conditions (C and E) will activate the Gripper Close Output (G) for ca. 1.2 seconds then raise the loader for dumping if condition (F) is OFF. If the grabbers are closed in stages (i.e. close the grabbers a little, go out, then close around the can in order to get between tight cans) then the close time before the raise starts will be reduced. Regardless of how many times the grabbers are closed and opened prior to gripping the can there will always be 0.6 seconds of time available to grab the can before the arm will raise. (i.e. if the operator closes the grabbers 3 times, even though the total grab time used is greater than 1.2 seconds there will be 0.6 seconds left to grab the can before raising.) The grabber close timer is reset to 1.2 seconds on un-dump or lowering the arm. With condition (A) true and condition (B) ON and condition (F) ON then the Gripper Close Rocker Switch (condition C) will control the output. The lift WILL NOT automatically rise in this scenario.

D02 Output Function – Loader Release Output (Body Output 11.04)

This output function controls the Loader Release Output. This output will open the grabbers by activating either a solenoid or a relay depending on the control package ordered.

Default Parameters	Default Setting
A. Loader Release Time	0.5 Sec.

Conditions Necessary to activate the circuit

Function or Component	Channel	LED Lamp	LED Status
A. System Power/E Stop	2	02	ON
B. Lift Coordinated Mode Rocker Switch	1	06	(See Note)
C. Gripper Open Rocker Switch	1	00	ON
D. Gripper Close Rocker Switch	2	00	OFF
E. Loader Dump Proximity Sw.	0	11	OFF
F. Hydraulic Pump, Loader, P1	11	02	ON
G. Loader Release Output	11	04	ON

Note: With condition (A) true and condition (B) OFF, conditions (C, D, E, and F) will activate the Loader Release output (G). With condition (A) true and condition (B) ON, conditions (C, E, and F) will activate the Loader Release output (G) for 0.5 seconds and as long as condition (C) is true.

D03 Output Function -- Loader In Output (Body Output 12.06)

This output function controls the Loader In output. This output will retract the loader by activating either a solenoid or a relay depending on the control package ordered.

Default Parameters	Default Setting
A. Gripper Close Time	1.2 Sec. (See Note for D01)
B. Loader ReleaseTime	0.5 Sec.

Conditions Necessary to activate the circuit

Function or Component	Channel	LED Lamp	LED Status
A. System Power/E Stop	2	02	ON
B. Lift Coordinated Mode Rocker Switch	1	06	(See Note)
C. Loader In Rocker Switch	2	10	ON
D. Loader In Proximity Switch	0	07	OFF
E. Loader Grip Rocker Switch	2	00	ON
F. Loader Release Rocker Switch	1	00	ON
G. STARR Jumper Input	1	01	(See Note)
H. STARR Coordinated In Proximity SW	1	11	ON (STARR ONLY)
I. Finesse Valve Input (option)	2	08	(See Note)
J. Loader In Output	12	06	ON

Note: With condition (A) true and condition (B) OFF, condition (C) will activate the Loader In output while condition (D) is met. With condition (A) true and condition (B) ON, condition (C) will activate the output or condition (E) ON and condition (I) OFF will activate the output after 1.2 seconds (see note for D01) or condition (F) will activate the output after 0.5 seconds until the following occurs: If condition (G) is OFF, condition (D) will deactivate the output. If condition (G) is ON, condition (H) will deactivate the output.

D04 Output Function -- Loader Out Output (Body Output 11.03)

This output function controls the Loader Out output. This output will extend the loader by activating either a solenoid or a relay depending on the control package ordered.

Default Parameters	Default Setting
A. None	N/A

Conditions Necessary to activate the circuit

Function or Component	Channel	LED Lamp	LED Status
A. System Power/E Stop	2	02	ON
B. Lift Coordinated Mode Rocker Sw.	1	06	(See Note)
C. Loader Out Rocker Switch	0	02	ON
D. Hydraulic Pump, Loader, P1	11	02	ON
E. Loader Out Output	11	03	ON

Note: With condition (A) true and condition (B) OFF, conditions (C) and (D) will activate the Loader Out output (E). With condition (A) true and condition (B) ON, conditions (C) and (D) will activate the output.

D05 Output Function -- Loader Up Output (Body Output 12.03)

This output function controls the Loader Up output. This output will raise the loader by activating either a solenoid or a relay depending on the control package ordered.

Default Parameters	Default Setting
A. Loader Grip Time ----------	1.2 Sec. (See Note for D01)

Conditions Necessary to activate the circuit

Function or Component	Channel	LED Lamp	LED Status
A. System Power/E Stop	2	02	ON
B. Lift Coordinated Mode Rocker Sw.	1	06	(See Note)
C. Loader Up Rocker Switch	0	05	ON
D. Loader Grip Rocker Switch	2	00	ON
E. Hydraulic Pump, Loader, P1	11	02	ON
F. Loader Up Prox Sw	1	03	OFF
G. Loader Fully Open Prox Sw	2	09	OFF
H. Fifth Wheel Prox (STARR)	1	09	OFF (STARR ONLY)
I. Finesse Valve Input (option)	2	08	(See Note)
J. Loader Up Output	12	03	ON

Note: With conditions (A), (E) and (H) true and condition (B) OFF, condition (C) will activate the Loader Up output (I) if condition (G) is true. With condition (A), (E) and (H) true and condition (B) ON and (F, and G) OFF, condition (C) will activate the output or condition (D) will activate the output after 1.2 seconds (see note for D01) if condition (I) is OFF until condition (D) is released. In either state (i.e. condition (B) on or off), if condition (G) is true (i.e. OFF) then the lift will raise normally. If condition (I) is ON then condition (C) will control the lift until condition (F) is true. If condition (G) is false (i.e. ON) then the lift will raise for ca. 0.3 seconds then stop to prevent damage to the body of the unit.

D06 Output Function -- Loader Down Output (Body Output 12.01)

This output function controls the Loader Down output. This output will lower the loader by activating either a solenoid or a relay depending on the control package ordered.

Default Parameters	Default Setting
A. Loader Un-dump Time ----------	0.5 Sec.

Conditions Necessary to activate the circuit

Function or Component	Channel	LED Lamp	LED Status
A. System Power/E Stop	2	02	ON
B. Lift Coordinated Mode Rocker Sw.	1	06	(See Note)
C. Loader Down Rocker Switch	2	11	ON
D. Loader Un-Dump Rocker Switch	0	06	ON
E. Hydraulic Pump, Loader, P1	11	02	ON
F. Loader Down Output	12	01	ON

Note: With condition (A) true and condition (B) OFF, conditions (C) and (E) will activate the Loader Down output (F). With condition (A) true and conditions (B) and (E) ON, condition (C) will activate the output or condition (D) will activate the output after 0.5 seconds until condition (D) is released.

D07 Output Function -- Loader Dump Output (Body Output 11.06)

This output function controls the Loader Dump output. This output will dump the grabbers by activating either a solenoid or a relay depending on the control package ordered.

Default Parameters	Default Setting
A. None	N/A

Conditions Necessary to activate the circuit

Function or Component	Channel	LED Lamp	LED Status
A. System Power/E Stop	2	02	ON
B. Lift Coordinated Mode Rocker Sw.	1	06	(See Note)
C. Loader Dump Rocker Switch	2	03	ON
D. Loader Grip Rocker Switch	2	00	ON
E. Loader Dump Proximity Sw.	0	11	ON
F. Hydraulic Pump, Loader, P1	11	02	ON
G. Loader Dump Output	11	06	ON

Note: With condition (A) true and condition (B) OFF, conditions (C) and (F) will activate the Loader Dump output (G). With condition (A) true and conditions (B) ON and (E) true, condition (C) will activate the output or conditions (D) and (E) will activate the output.

D08 Output Function -- Loader Un-Dump Output (Body Output 10.03)

This output function controls the Loader Un-Dump output. This output will un-dump the grabbers by activating either a solenoid or a relay depending on the control package ordered.

Default Parameters	Default Setting
A. Un-dump Time	0.5 Sec.

Conditions Necessary to activate the circuit

Function or Component	Channel	LED Lamp	LED Status
A. System Power/E Stop	2	02	ON
B. Lift Coordinated Mode Rocker Sw.	1	06	(See Note)
C. Loader Un-Dump Rocker Switch	0	06	ON
D. Hydraulic Pump, Loader, P1	11	02	ON
E. Loader Un-Dump Prox Sw	2	05	OFF
F. Loader Un-Dump Output	10	03	ON

Note: With condition (A) true and condition (D) ON and conditions (B,and E) OFF, condition (C) will activate the Loader Un-Dump output (E). With condition (A) true and conditions (B, and D) ON and condition (E) OFF, condition (C) will activate the output then 0.5 seconds later the lift will lower

D09 Output Function – Pack Right Solenoid (Body Output 12.02)

This output function controls the Pack Right solenoid.

Default Parameters **Default Setting**

None

Conditions Necessary to activate the circuit

Function or Component	Channel	LED Lamp	LED Status
A. System Power/E Stop	2	02	ON
B. Hydraulic Pump, Body, P2	10	00	ON
C. Manual Packer Rocker Switch	1	10	(See Note)
D. Packer Right Rocker Switch	1	08	ON
E. Packer Proximity Switch	2	01	ON
F. Packer Pressure Switch	0	03	ON
G. Loader Undump Sol	10	03	ON
H. Pack Right Solenoid	12	02	ON

Note: With conditions (A) and (B) true, and condition (C) ON, condition (D) will activate the Pack Right solenoid (H). With conditions (A) and (B) true, condition (C) OFF the packer will move to the right if the packer is on the left side when condition (G) is true until either condition (E) or (F).

D10 Output Function – Pack Left Solenoid (Body Output 11.00)

This output function controls the Pack Left solenoid.

Default Parameters **Default Setting**

A. Packer Startup Time ---------- 5.0 Sec.

Conditions Necessary to activate the circuit

Function or Component	Channel	LED Lamp	LED Status
A. System Power/E Stop	2	02	ON
B. Hydraulic Pump, Body, P2	10	00	ON
C. Manual Packer Rocker Switch	1	10	(See Note)
D. Packer Left Rocker Switch	0	08	ON
E. Packer Proximity Switch	2	01	ON
F. Packer Pressure Switch	0	03	ON
G. Loader Undump Sol.	10	03	ON
H. Pack Left Solenoid	11	00	ON

Note: With conditions (A) and (B) true and condition (C) ON, condition (D) will activate the Pack Left solenoid (H). With conditions (A) and (B) true and condition (C) OFF the packer will oscillate between Pack Left and Pack Right. With conditions (A) and (B) true, condition (C) OFF the packer will move to the left if the packer is on the right side when condition (G) is true until either condition (E) or (F). If condition (C) is "cycled" (i.e. turned ON then OFF again regardless of the period of time) the Pack Left solenoid will energize for a minimum of 5 seconds. Conditions (E) and (F) will be ignored during this 5 seconds.

D11 Output Function – Loader Latch Solenoid (Body Output 10.06)

This output function controls the Loader Latch solenoid.

Default Parameters	Default Setting
A. None	N/A

Conditions Necessary to activate the circuit

Function or Component	Channel	LED Lamp	LED Status
A. Service Brake	01	04	ON
B. Chassis Neutral	00	01	ON
C. Body Pump – P2	10	00	ON
D. Loader Out Solenoid	11	03	ON
E. Loader Latch Solenoid	10	06	ON

Note: With condition (A) true OR condition (B) true, AND condition (C) and condition (D) true the Loader Latch Solenoid (E) will be activated.

D12 Output Function – Reverse Flood Lights (Body Output 11.01)

This output function controls the Reverse Flood Light output.

Default Parameters	Default Setting
A. None	N/A

Conditions Necessary to activate the circuit

Function or Component	Channel	LED Lamp	LED Status
A. Chassis Reverse Signal	2	07	ON
B. Reverse Flood Lights Output	11	01	ON

Note: With condition (A) true, the Reverse Flood Lights output (B) will be activated.

4.05: Optional In-Cab Input Functions

E01 Input Function – Auto-Neutral Enable Switch (In-Cab Input 00.04)

This circuit monitors the on/off status of the Auto-Neutral Enable switch.

Function Logic

Input Device	Channel	LED Lamp	LED Status
A. Auto-Neutral Enable Switch	00	04	See Note

Note: Reference functions F01 and F02 for **LED Status** conditions during operation.

4.06: Optional In-Cab Output Functions

F01 Output Function – Allison Wires 142/117 (In-Cab Output 11.05)

This output function controls Allison wires 142 and 117 which are part of the Auto-Neutral function of the transmission. This enables Auto-Neutral condition waiting on the Service Brake signal (output F02).

Default Parameters	Default Setting
A. None	N/A

Conditions Necessary to activate the circuit

Function or Component	Channel	LED Lamp	LED Status
A. Auto-Neutral Enable Sw.	00	04	See Note
B. Coordinated Mode Sw.	01	06	See Note
C. STARR Jumper	01	01	See Note
D. Loader In Proximity Sw.	00	07	See Note
E. STARR Coordinated In Prox. Sw.	01	11	See Note
F. Grabber Close Sw.	02	00	See Note
G. Brake Signal	01	04	See Note
H. Neutral Signal	00	10	See Note

Note: With condition (A) ON and condition (F) ON OR condition (A) OFF, condition (G) OFF, the Loader Is IN (Loader IN is defined as: condition (B) ON, condition (C) ON and on or past condition (E) OR condition (C) OFF and on or past condition (D)) AND condition (H) OFF the output will be ON.

F02 Output Function – Allison Wire 162 (In-Cab Output 10.05)

This output function controls Allison wire 162, the service brake input for the Auto-Neutral function.

Default Parameters	Default Setting
A. None	N/A

Conditions Necessary to activate the circuit

Function or Component	Channel	LED Lamp	LED Status
A. STARR Jumper	01	01	See Note
B. Loader In Proximity Sw.	00	07	See Note
C. STARR Coordinated In Prox. Sw.	01	11	See Note
D. Brake Signal	01	04	See Note
E. Neutral Signal	00	10	See Note

Note: With Loader IN (see F01) and condition (E) OFF, condition (D) the output will be ON.

4.07: Optional Body Input Functions

G01 Input Function – Low Engine Torque Pressure Switch (Body Input 01.05)

This circuit monitors the on/off status of the low engine torque pressure switch.

Function Logic

Input Device	Channel	LED Lamp	LED Status
A. Low Engine Torque Press Sw	1	05	See Note

Note: Reference function B04 for **LED Status** conditions during operation.

G02 Input Function – Fifth Wheel Proximity Switch (STARR) (Body Input 01.09)

This circuit monitors the on/off status of the fifth wheel proximity switch. This input is only used on STARR units.

Function Logic

Input Device	Channel	LED Lamp	LED Status
A. Fifth Wheel Prox Switch	1	09	See Note

Note: Reference function D05 for **LED Status** conditions during operation.

4.08: Optional Body Output Functions

Not Applicable.

Section 5: Special Features

5.01: Auto/Manual Pack Mode

Auto/Manual Pack Mode is a standard feature on all PLC controlled products. While in Auto Mode the packer will swap from left to right (or right to left depending on where the packer starts) on the Loader Unload command until either the packer pressure switch or the packer proximity switch is seen. While in manual mode it will be necessary to hold the packer left or pack right buttons in order to sweep the packer. Manual/Auto Mode is controlled by a rocker switch located on the control panel.

5.02: Coordinated Lift/Manual Lift Mode

This unit is equipped with Coordinated Lift Mode. In Coordinated Lift Mode, the Loader is extended manually by pressing the Loader Out button. Pressing and holding the Grip button will grip a can and approx. 1 second later start the loader in and up, dumping the can when the dump proximity switch is reached. Pressing and holding the Un-dump button will un-dump the can and bring the loader arm down. The loader is then manually extended. Pressing and holding the Release button will release the can then retract the loader arm. In Manual Mode all of the functions of the loader arm are activated by the loader buttons. Manual/Auto mode is controlled by a rocker switch located on the control panel.

Section 6: Diagnostics

6.01: Testing I/O Voltage

To test the voltage at an input or output terminal a Digital Multi Meter is always the best tool. Incandescent test lights cannot be used to test inputs from certain electronic input devices, the amperage required to light and incandescent tester may exceed the maximum output of the device. If using a test light it must be an LED type tester. Upon inspection of the PLC assembly, note that there are through holes in the upper circuit boards. These holes provide test probe access to the lower I/O terminals.

6.02: Monitoring Input Status

Input status can be determined by the state of the LED indicators located on the face of the PLC.

6.03: Monitoring Output Status

Output status can be determined by the state of the LED indicators located on the face of the PLC.

6.04: Diagnostic Beep Codes

Each Diagnostic code consists of a two-digit number. When a fault has been set the In-Cab Alarm will sound for 5 seconds, then pause. Then beep a number of times specifying the first digit of the code, pause for 2 seconds. Then resume to beep a number of times specifying the second digit of the code. Fault information can also be accessed through the Diagnostic Link.

There are two classes of faults the first is a system fault. A system fault indicates a possible electrical problem with some part of a specific circuit. The second is a Critical Fault. A critical fault indicates that a problem is occurring which, has or will shut the hydraulic pump system down.

- **Fault #31- High Transmission Temperature**

Operate In Gear At Idle systems monitor the temperature of the transmission sump fluid and the fluid flowing out of the torque converter to the cooler. This fault will be set when either of these temperature levels exceed operating range. The maximum operating temperature for the transmission sump fluid is 250°F. The maximum operating temperature for the converter out fluid is 300°F.

Indication: A. The transmission temperature has exceeded a safe operating range.
B. An open has occurred in the Trans. Temp. input circuit.

Disabled Functions: Hydraulic Pump

Fault Reset: In order to reset this fault:
1. the trans. must be placed in neutral range
2. and the engine must be running at or above idle speed
3. and the trans. temperature. must cool to a safe level and remain at a safe level for three minutes.

- **Fault #32- Filter Bypass Shutdown**

The hydraulic system has been operating in bypass condition in excess of the number of hours set by the Start Filter Shutdown parameter.

Indications: The hydraulic filter needs servicing

Disabled Functions: Hydraulic Pump

Fault Reset: Cycling the System Power Switch will allow three minutes of further operation or service hydraulic filter

- **Fault #41- Engine Speed Not Detected**

The PLC is unable to correctly count the R stator pulse.

Indication: A. Intermittent connection in the R Stator input circuit.
B. Invalid R Stator Signal due to a faulty alternator output.
C. The ignition switch has been left in the run position with the engine shutdown.

Disabled Functions: Hydraulic Pump

Fault Reset: Self reset upon restoration of the R Stator circuit.

- **Fault #42- Loss of Engine Idle Calibration**

The Engine Idle parameter has been erased from memory.

Indication: A. Engine Idle needs to be calibrated.
B. Internal data storage device has malfunction. Replace PLC

Disabled Functions: Hydraulic Pump

Fault Reset: Cycling the System Power Switch will allow three minutes of further operation or

complete the engine speed calibration procedure.

- **Fault #43- Loss of Engine Tach. Calibration**

The Tach. Hz./2 at Engine Idle has been erased from PLC memory.

Indication: A. Engine speed needs to be calibrated.
B. Internal data storage device has malfunction. Replace PLC

Disabled Functions: Hydraulic Pump

Fault Reset: Cycling the System Power Switch will allow three minutes of further operation or complete the engine speed calibration procedure.

- **Fault #54- Filter Bypass Switch Fault**

The PLC has lost the signal from the filter pressure switch while neither hydraulic pump was in operation. This is recognized as a fault because there should be no hydraulic pressure to bypass the filter under this condition.

Indication: A. The filter bypass pressure switch has been disconnected.
B. An open has occurred in the filter bypass input circuit.
C. The filter pressure switch has failed open.

Disabled Functions: None

Fault Reset: Cycle System Power Switch or
Restore filter pressure switch input to PLC

Note: This fault is applicable on dry valve pump systems only.

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SERVICE MANUAL

SECTION 10 SCHEMATICS

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Customer Support

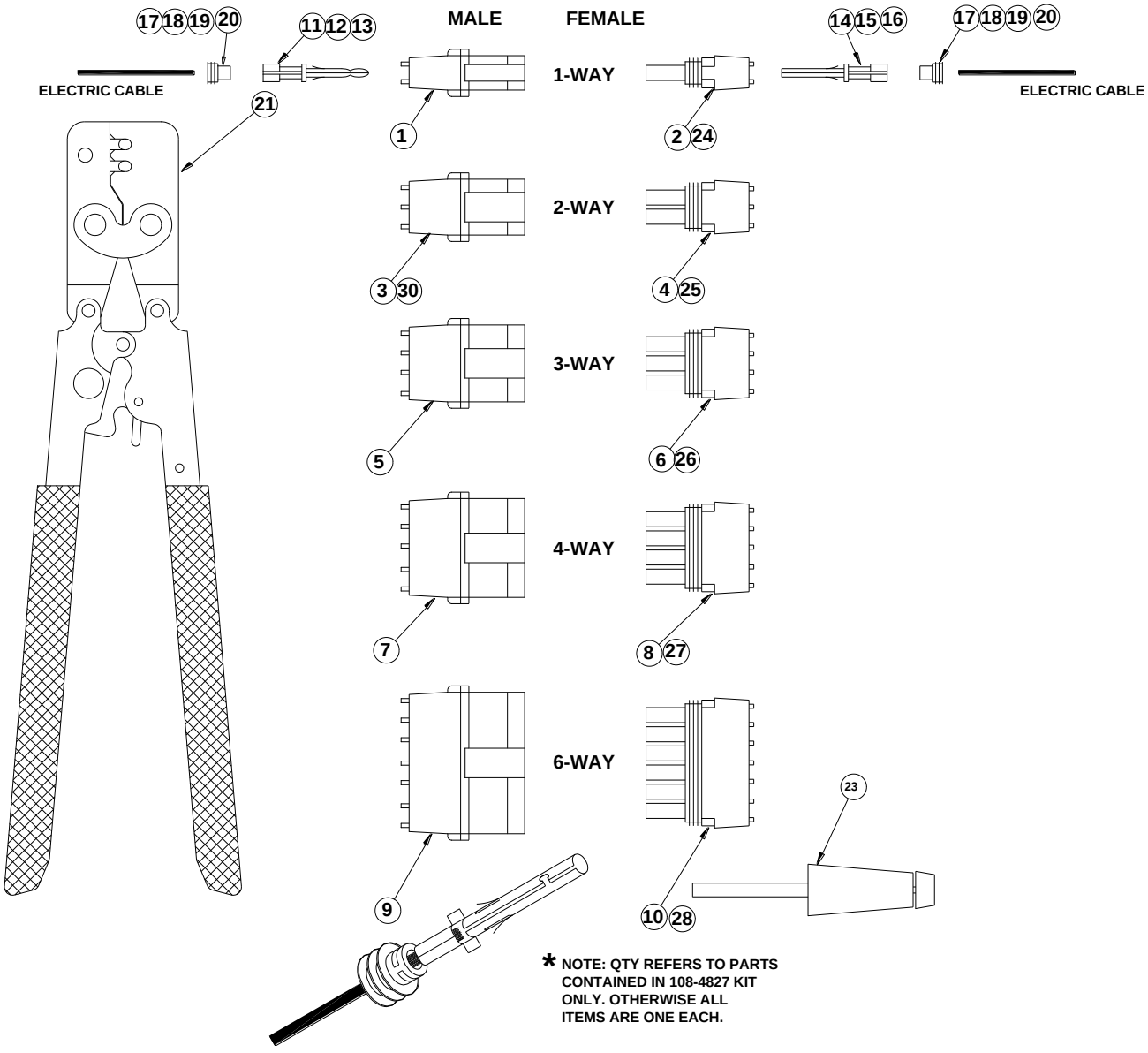
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Rapid Rail® Co Collector
SCHEMATICS
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SCHEMATICS
PACKARD CONNECTION KIT - 108-4827



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SCHEMATICS
PACKARD CONNECTION KIT - 108-4827

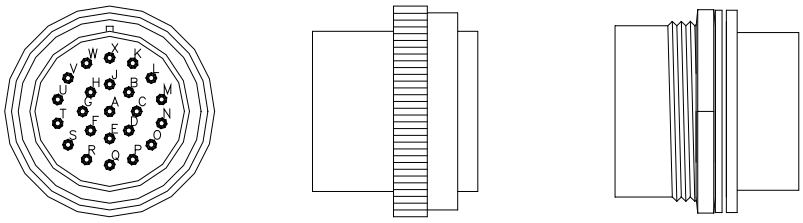
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	108-4827	KIT, Packard connection	-	REF
1	108-4827-001	CONNECTION, 1-Way Male	-	20
2	108-4827-002	CONNECTION, 1-Way Female	-	20
3	108-4827-003	CONNECTION, 2-Way Male	-	20
4	108-4827-004	CONNECTION, 2-Way Female	-	20
5	108-4827-005	CONNECTION, 3-Way Male	-	20
6	108-4827-006	CONNECTION, 3-Way Female	-	20
7	108-4827-007	CONNECTION, 4-Way Male	-	20
8	108-4827-008	CONNECTION, 4-Way Female	-	20
9	108-4827-009	CONNECTION, 6-Way Male	-	20
10	108-4827-010	CONNECTION, 6-Way Female	-	20
11	108-4827-110	TERMINAL, Male (18-20 AWG)	-	60
12	108-4827-111	TERMINAL, Male (16-14 AWG)	-	200
13	108-4827-112	TERMINAL, Male (10-12 AWG)	-	60
14	108-4827-120	TERMINAL, Female (18-20 AWG)	-	60
15	108-4827-121	TERMINAL, Female (16-14 AWG)	-	200
16	108-4827-122	TERMINAL, Female (10-12 AWG)	-	60
17	108-4827-130	SEAL, Cable – (20 GA)	-	20
18	108-4827-131	SEAL, Cable – (18 GA)	-	100
19	108-4827-132	SEAL, Cable – (16-14 GA)	-	400
20	108-4827-133	SEAL, Cable – (12 GA)	-	100
21	108-4827-134	PLUG, Cavity	-	20
22	108-4828-001	TOOL, Installation	-	1
23	108-4828-002	TOOL, Removal	-	1
24	108-4827-014	SEAL, 1-Way Female Connection	-	A/R
25	108-4827-015	SEAL, 2-Way Female Connection	-	A/R
26	108-4827-016	SEAL, 3-Way Female Connection	-	A/R
27	108-4827-017	SEAL, 4-Way Female Connection	-	A/R
28	108-4827-018	SEAL, 6-Way Female Connection	-	A/R
29	108-4827-200	GREASE, Trucklite, NYK	-	A/R
30	108-4827-010	CONNECTION, 2-Way Male	-	A/R

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SCHEMATICS

CONNECTORS, PLUGS, PINS AND ACCESSORIES FOR DEUTSCH ELECTRICAL PARTS - 108-4815



PINS AND SOCKETS

108-4815-101	PIN (6 GA)
108-4815-102	SOCKET (6 GA)
108-4815-103	SEALING PLUG (6 GA)
108-4815-104	PIN (8-10 GA)
108-4815-105	SOCKET (8-10 GA)
108-4815-106	SEALING PLUG (8-10 GA)
108-4815-107	PIN (12-14 GA)
108-4815-108	SOCKET (12-14 GA)
108-6461-100	SEALING PLUG (12-14 GA)
108-4815-110	PIN (16-18 GA)
108-4515-111	SOCKET (16-18 GA)
108-6461-100	SEALING PLUG (16-18 GA)
108-4815-112	PIN (20-24 GA)
108-4815-113	SOCKET (20-24 GA)
108-4815-114	SEALING PLUG (20-24 GA)

GOLD PINS & SOCKETS

108-4815-120	PIN (12-14 GA)
108-4815-121	SOCKET (12-14 GA)
108-4815-124	PIN (14-16 GA)
108-4815-125	SOCKET (14-16 GA)
108-4815-122	PIN (16-18 GA)
108-4815-123	SOCKET (16-18 GA)
108-4815-126	PIN (20-24 GA)
108-4815-127	SOCKET (20-24 GA)

METAL CONNECTOR SHELLS

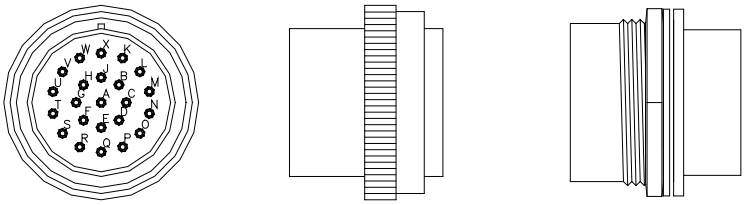
108-4815-001	21 (Pin) RECEPTACLE
108-4515-002	21 (Socket) PLUG
108-4815-003	31 (Pin) RECEPTACLE
108-4815-004	31 (Socket) PLUG
108-4815-005	23 (Pin) RECEPTACLE
108-4815-006	23 (Socket) PLUG
108-4815-007	16 (Pin) RECEPTACLE
108-4815-008	16 (Socket) PLUG
108-4815-009	14 (Pin) RECEPTACLE (16 GA)
108-4515-010	14 (Socket) PLUG (16 GA)
108-4815-015	35 (Pin) RECEPTACLE (3-16 GA, 32-20 GA)
108-4815-016	35 (Socket) PLUG (3-16 GA, 32-20 GA)
108-4815-017	8 (Pin) RECEPTACLE (12 GA)
108-4815-018	8 (Socket) PLUG (12 GA)

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PLASTIC CONNECTOR SHELLS

108-4815-020	21-PIN RECEPTACLE
108-4815-021	21-PIN SOCKET
108-4815-022	19-PIN RECEPTACLE
108-4815-023	19-PIN SOCKET
108-4815-024	23-PIN RECEPTACLE
108-4815-025	23-PIN SOCKET
108-4815-030	31 PIN RECEPTACLE
108-4815-031	31 SOCKET PLUG
108-4815-032	16 PIN PLUG
108-4815-033	16 SOCKET RECEPTACLE
108-4815-034	16 PIN RECEPTACLE
108-4815-035	16 SOCKET RECEPTACLE
108-4815-036	16 PIN RECEPTACLE
108-4815-037	29 PIN RECEPTACLE
108-4815-038	9 SOCKET RECEPTACLE
108-4815-067	23 SOCKET PLUG WITH RING ADAPTOR
108-4815-068	29 SOCKET PLUG WITH RING ADAPTOR
108-4815-069	9 SOCKET PLUG WITH RING ADAPTOR
108-4815-070	8 PIN RECEPTACLE (12-16)
108-4815-071	8 PIN PLUG (12-16)
108-4815-182	21 PIN RECEPTACLE
108-4815-183	21 SOCKET PLUG
108-4815-184	19 PIN RECEPTACLE
108-4815-185	19 PIN PLUG

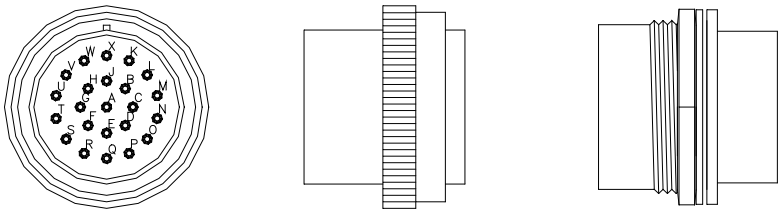
ACCESSORIES

108-4815-150	PANEL NUT, 24 SHELL
108-4815-151	LOCKWASHER, 24 SHELL
108-4815-152	STRAIN RELIEF STRAIGHT 24
108-4815-153	STRAIN RELIEF 90° 24
108-4815-154	PANEL NUT, 18 SHELL
108-4815-155	LOCKWASHER, 18 SHELL
108-4815-156	STRAIN RELIEF STRAIGHT 18
108-4815-157	STRAIN RELIEF 90° 18
108-4815-158	REMOVAL TOOL (6 GA)
108-4815-159	REMOVAL TOOL (8-10 GA)
108-4815-160	REMOVAL TOOL (12-14 GA)
108-4815-161	REMOVAL TOOL (16-18 GA)
108-4815-162	REMOVAL TOOL (20-24 GA)
108-4815-163	CRIMP TOOL (12-24 GA)
108-4815-164	CRIMP TOOL (6-10 GA)
108-4815-165	RECEPTACLE CAP. 18 PIN
108-4815-166	RECEPTACLE CAP, 24 PIN
108-4815-167	PLUG CAP, 18 PIN
108-4815-168	PLUG CAP, 24 PIN

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ACCESSORIES - Continued

108-4815-169	****
108-4815-170	DT SCREWDRIVER TOOL
108-4815-180	PANEL NUT, 18 SHELL
108-4815-181	LOCKWASHER, 18 SHELL
108-4815-186	BACKSHELL, 90º, 24 SHELL
108-4815-187	BACKSHELL, STRAIGHT, 24
108-4815-188	LG COMPRESSION BACKSHELL
108-4815-189	LG COMPRESSION NUT
108-4815-190	SM COMPRESSION BACKSHELL
108-4815-191	SM COMPRESSIONS NUT

METAL CONNECTOR SHELLS

108-4815-001	21 (PIN) RECEPTACLE
108-4515-002	21 (SOCKET) PLUG
108-4815-003	31 (PIN) RECEPTACLE
108-4815-004	31 (SOCKET) PLUG
108-4815-005	23 (PIN) RECEPTACLE
108-4815-006	23 (SOCKET) PLUG
108-4815-007	16 (PIN) RECEPTACLE
108-4815-008	16 (SOCKET) PLUG
108-4815-009	14 (PIN) RECEPTACLE (16 GA)
108-4515-010	14 (SOCKET) PLUG (16 GA)
108-4815-015	35 (PIN) RECEPTACLE (3-16 GA, 32-20 GA)
108-4815-016	35 (SOCKET) PLUG (3-16 GA, 32-20 GA)
108-4815-017	8 (PIN) RECEPTACLE (12 GA)
108-4815-018	8 (SOCKET) PLUG (12 GA)

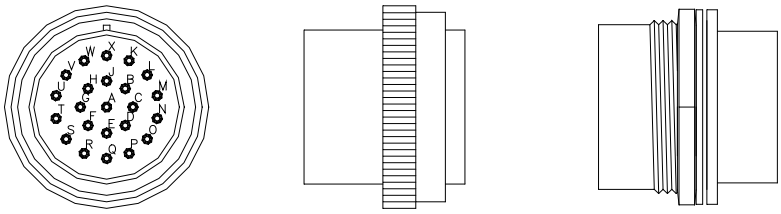
METAL CONNECTOR KITS WITH NORMAL WIRE SEALS (GREEN RING)

108-4815-011	14 PIN RECEPTACLE KIT (16 GA)
108-4815-012	14 SOCKET PLUG KIT (16 GA)
108-4815-013	14 PIN RECEPTACLE WITH STRAIN KIT (16 GA)
108-4815-014	14 SOCKET PLUG WITH STRAIN KIT (16 GA)
108-4815-052	35 PIN RECEPTACLE (16/20) KIT
108-4815-053	35 SOCKET PLUG (16/20) KIT
108-4815-054	35 PIN RECEPTACLE (16/20) WITH STRAIN KIT
108-4815-055	35 SOCKET PLUG (16/20) WITH STRAIN KIT
108-4815-056	21 PIN RECEPTACLE (12/16) KIT
108-4815-057	21 SOCKET PLUG (12/16) KIT
108-4815-058	21 PIN RECEPTACLE (12/16) WITH STRAIN KIT
108-4815-059	21 SOCKET PLUG (12/16 GA) WITH STRAIN KIT
108-4815-064	9 PIN RECEPTACLE KIT (4/8/12 GA)
108-4815-065	9 SOCKET PLUG KIT (4/8/12 GA)
108-4815-066	9 PIN RECEPTACLE WITH STRAIN KIT (4/8/12 GA)

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METAL CONNECTOR KITS WITH EXTRA THIN WIRE SEALS (BLUE RING)

108-4815-60	31 PIN RECEPTACLE (16) KIT
108-4815-61	31 SOCKET PLUG (16) KIT
108-4815-62	31 PIN RECEPTACLE (16) WITH STRAIN KIT
108-4815-63	31 SOCKET PLUG (16 WITH STRAIN KIT

METAL CONNECTOR KITS WITH EXTRA THIN WALL WIRE SEALS (BLUE RING)

108-4815-040	21 PIN RECEPTACLE (12/16) KIT
108-4815-041	21 SOCKET PLUG (12/16 GA) KIT
108-4815-042	21 PIN RECEPTACLE 12/16) WITH STRAIN KIT
108-4815-043	21 SOCKET PLUG (12/16 GA) WITH STRAIN KIT

METAL CONNECTOR KITS WITH NORMAL WIRE SEALS (BLUE RING)

108-4815-044	23 PIN RECEPTACLE (16 GA) KIT
108-4815-045	23 SOCKET PLUG (16 GA) KIT
108-4815-046	23 PIN RECEPTACLE (16 GA) WITH STRAIN KIT
108-4815-047	23 SOCKET PLUG (16 GA) WITH STRAIN KIT
108-4815-048	31 PIN RECEPTACLE (16) KIT
108-4815-049	31 SOCKET PLUG (16 KIT
108-4815-050	31 PIN RECEPTACLE (16) WITH STRAIN KIT
108-4815-051	31 SOCKET PLUG (16) WITH STRAIN KIT

PLASTIC CONNECTOR KITS

108-4815-026	21 PIN RECEPTACLE KIT
108-4815-027	21 SOCKET PLUG KIT
108-4815-028	9 PIN RECEPTACLE KIT (4/8/12 GA)
108-4815-029	9 PIN RECEPTACLE KIT (4/8/12 GA)

KIT 108-4815 IS COMPRISED OF THE FOLLOWING:

- 108-4815-021
- 108-4815-121
- 108-4815-124
- 108-6461-100
- 108-4815-150
- 108-4815-151

KIT 108-4815-027 IS COMPRISED OF THE FOLLOWING:

- 108-4815-021
- 108-4815-121
- 108-4815-125
- 108-6461-100

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DEUTSCH CONNECTION KIT - 108-6461-PC

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	108-6461-PC	KIT, Deutsch Connection	-	REF
1	108-6461-003P	PLUG, 3-Way	-	15
2	108-6461-003PW	WEDGE, 3-Way Plug	-	15
3	108-6461-003PB	BOOT, 3-Way Plug	-	15
4	108-6461-003R	RECEPTACLE, 3-Way	-	15
5	108-6461-003RW	WEDGE, 3-Way Receptacle	-	15
6	108-6461-003RB	BOOT, 3-Way Receptacle	-	15
7	108-6461-004P	PLUG, 4-Way	-	3
8	108-6461-004PW	WEDGE, 4-Way Plug	-	3
9	108-6461-004PB	BOOT, 4-Way Plug	-	3
10	108-6461-004R	RECEPTACLE, 4-Way	-	3
11	108-6461-004RW	WEDGE, 4-Way Receptacle	-	3
12	108-6461-004RB	BOOT, 4-Way Receptacle	-	3
13	108-6461-006P	PLUG, 6-Way	-	3
14	108-6461-006PW	WEDGE, 6-Way Plug	-	3
15	108-6461-006PB	BOOT, 6-Way Plug	-	3
16	108-6461-006R	RECEPTACLE, 6-Way	-	3
17	108-6461-006RW	WEDGE, 6-Way Receptacle	-	3
18	108-6461-006RB	BOOT, 6-Way Receptacle	-	3
19	108-6461-008P	PLUG, 8-Way	-	9
20	108-6461-008PW	WEDGE, 8-Way Plug	-	9
21	108-6461-008PB	BOOT, 8-Way Plug	-	9
22	108-6461-008R	RECEPTACLE, 8-Way	-	9
23	108-6461-008RW	WEDGE, 8-Way Receptacle	-	9
24	108-6461-008RB	BOOT, 8-Way Receptacle	-	9
25	108-6461-012P	PLUG, 12-Way	-	3
26	108-6461-CPW	WEDGE, 12-Way Plug	-	3
27	108-6461-CPB	BOOT, 12-Way Boot	-	3
28	108-6461-012R	RECEPTACLE, 12-Way	-	3
29	108-6461-CRW	WEDGE, 12-Way Receptacle	-	3
30	108-6461-CRB	BOOT, 12-Way Receptacle	-	3
31	108-6461-100	PLUG, Sealing	-	25
32	108-6461-101	PIN, Gold Plated	-	200
33	108-6461-102	SOCKET, Gold Plated	-	200
34	108-6461-200	CRIMPER, Production	-	1
35	108-6461-201	CRIMPER, Field Kit	-	1
36	108-6461-202	REMOVAL TOOL	-	1

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SCHEMATICS
DEUTSCH DT SERIES CONNECTOR KITS - 108-8411

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	108-8411	KITS, Deutsch Connector, DT Series	-	REF
1	108-8411-001	KIT, Deutsch Connector, DT Series	-	REF
-	108-8411-02R	RECEPTACLE, 2-Way	-	1
-	108-4815-120	PIN, Gold 12 AWG	-	2
-	108-8411-2RW	RECEPTACLE, 2-Way Wedge	-	1
-	108-6461-100	PLUG, Sealing	-	2
-	108-8411-2RB	BOOT, Receptacle	-	1
2	108-8411-002	KIT, Deutsch Connector, DT Series	-	REF
-	108-8411-02P	PLUG, 2-Way	-	1
-	108-4815-121	PIN, Gold 12 AWG	-	2
-	108-8411-2PW	PLUG, 2-Way Wedge	-	1
-	108-6461-100	PLUG, Sealing	-	2
-	108-8411-2RB	BOOT, Plug	-	1
3	108-8411-003	KIT, Deutsch Connector, DT Series	-	REF
-	108-8411-04R	RECEPTACLE, 4-Way	-	1
-	108-4815-120	PIN, Gold 12 AWG	-	4
-	108-8411-4RW	RECEPTACLE, 4-Way Wedge	-	1
-	108-6461-100	PLUG, Sealing	-	2
-	108-8411-4RB	BOOT, Receptacle	-	1
4	108-8411-004	KIT, Deutsch Connector, DT Series	-	REF
-	108-8411-04P	PLUG, 4-Way	-	1
-	108-4815-121	PIN, Gold 12 AWG	-	4
-	108-8411-4PW	PLUG, 4-Way Wedge	-	1
-	108-6461-100	PLUG, Sealing	-	2
-	108-8411-4PB	BOOT, Plug	-	1
5	108-8411-005	KIT, Deutsch Connector, DT Series	-	REF
-	108-8411-22R	RECEPTACLE, 2-Way Mounted	-	1
-	108-4815-120	PIN, Gold 12 AWG	-	2
-	108-8411-2RW	RECEPTACLE, 2-Way Wedge	-	1
-	108-6461-100	PLUG, Sealing	-	2
-	108-8411-2RB	BOOT, Receptacle	-	1
6	108-8411-006	KIT, Deutsch Connector, DT Series	-	REF
-	108-8411-24R	RECEPTACLE, 4-Way Mounted	-	1
-	108-4815-120	PIN, Gold 12-AWG	-	4
-	108-8411-4RW	RECEPTACLE, 4-Way Wedge	-	1
-	108-6461-100	PLUG, Sealing	-	2
-	108-8411-4RB	BOOT, Receptacle	-	1

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DEUTSCH DT SERIES CONNECTOR KITS - BOOTS - 108-6461

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	108-6461	KITS, Deutsch Connection, DT Series	-	REF
1	108-6461-3PB	BOOT, 3-Way Plug	-	A/R
2	108-6461-3RB	BOOT, 3-Way Receptacle	-	A/R
3	108-6461-4PB	BOOT, 4-Way Plug	-	A/R
4	108-6461-4RB	BOOT, 4-Way Receptacle	-	A/R
5	108-6461-6PB	BOOT, 6-Way Plug	-	A/R
6	108-6461-6RB	BOOT, 6-Way Receptacle	-	A/R
7	108-6461-8PB	BOOT, 8-Way Plug	-	A/R
8	108-6461-8RB	BOOT, 8-Way Receptacle	-	A/R
9	108-6461-CPB	BOOT, 12-Way Plug	-	A/R
10	108-6461-CRB	BOOT, 12-Way Receptacle	-	A/R
11	108-6461-2PB	BOOT, 2-Way Plug	-	A/R
12	108-6461-2RB	BOOT, 2-Way Receptacle	-	A/R

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DEUTSCH DT SERIES CONNECTOR KITS - STRAIGHT - 108-6461

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	108-6461	KITS, Deutsch Connection, DT Series	-	REF
1	108-6461-001	KIT, Deutsch Connector, DT Series, Straight	-	REF
-	108-6461-03P	PLUG, 3-Way	-	1
-	108-6461-3PW	PLUG, 3-Way Wedge	-	1
-	108-6461-102	SOCKET, Gold Plated	-	3
-	108-6461-100	PLUG, Sealing	-	2
-	108-6461-027	PLUG, 3-Way Straight Backshell	-	1
2	108-6461-002	KIT, Deutsch Connector, DT Series, Straight	-	REF
-	108-6461-03R	RECEPTACLE, 3-Way	-	1
-	108-6461-3RW	RECEPTACLE, 3-Way Wedge	-	1
-	108-6461-101	PIN, Gold Plated	-	3
-	108-6461-100	PLUG, Sealing	-	2
-	108-6461-015	RECEPTACLE, 3-Way Straight Backshell	-	1
3	108-6461-003	KIT, Deutsch Connector, DT Series, Straight	-	REF
-	108-6461-04P	PLUG, 4-Way	-	1
-	108-6461-4PW	PLUG, 4-Way Wedge	-	1
-	108-6461-102	SOCKET, Gold Plated	-	4
-	108-6461-100	PLUG, Sealing	-	1
-	108-6461-029	PLUG, 4-Way Straight Backshell	-	1
4	108-6461-004	KIT, Deutsch Connector, DT Series, Straight	-	REF
-	108-6461-04R	RECEPTACLE, 4-Way	-	1
-	108-6461-4RW	RECEPTACLE, 4-Way Wedge	-	1
-	108-6461-101	PIN, Gold Plated	-	4
-	108-6461-100	PLUG, Sealing	-	1
-	108-6461-017	RECEPTACLE, 4-Way Straight Backshell	-	1
5	108-6461-005	KIT, Deutsch Connector, DT Series, Straight	-	REF
-	108-6461-06P	PLUG, 6-Way	-	1
-	108-6461-6PW	PLUG, 6-Way Wedge	-	1
-	108-6461-102	SOCKET, Gold Plated	-	6
-	108-6461-100	PLUG, Sealing	-	1
-	108-6461-031	PLUG, 6-Way Straight Backshell	-	1
6	108-6461-006	KIT, Deutsch Connector, DT Series, Straight	-	REF
-	108-6461-06R	RECEPTACLE, 6-Way	-	1
-	108-6461-6RW	RECEPTACLE, 6-Way Wedge	-	1
-	108-6461-101	PIN, Gold Plated	-	6
-	108-6461-100	PLUG, Sealing	-	1
-	108-6461-019	RECEPTACLE, 6-Way Straight Backshell	-	1
7	108-6461-007	KIT, Deutsch Connector, DT Series, Straight	-	REF
-	108-6461-08P	PLUG, 8-Way	-	1
-	108-6461-08PW	PLUG, 8-Way Wedge	-	1
-	108-6461-102	SOCKET, Gold Plated	-	8
-	108-6461-100	PLUG, Sealing	-	1
-	108-6461-033	PLUG, 8-Way Straight Backshell	-	1

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DEUTSCH DT SERIES CONNECTOR KITS - STRAIGHT - 108-6461 – CONTINUED

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	108-6461	KITS, Deutsch Connection, DT Series	-	REF
8	108-6461-008	KIT, Deutsch Connector, DT Series, Straight	-	REF
-	108-6461-08R	RECEPTACLE, 8-Way	-	1
-	108-6461-8RW	RECEPTACLE, 8-Way Wedge	-	1
-	108-6461-101	PIN, Gold Plated	-	8
-	108-6461-100	PLUG, sealing	-	1
-	108-6461-021	RECEPTACLE, 8-Way Straight Backshell	-	1
9	108-6461-009	KIT, Deutsch Connector, DT Series, Straight	-	REF
-	108-6461-12P	PLUG, 12-Way	-	1
-	108-6461-CPW	PLUG, 12-Way Wedge	-	1
-	108-6461-102	SOCKET, Gold Plated	-	12
-	108-6461-100	PLUG, Sealing	-	3
-	108-6461-035	PLUG, 12-Way Straight Backshell	-	1
10	108-6461-010	KIT, Deutsch Connector, DT Series, Straight	-	REF
-	108-6461-12R	RECEPTACLE, 12-Way	-	1
-	108-6461-CRW	RECEPTACLE, 12-Way Wedge	-	1
-	108-6461-101	PIN, Gold Plated	-	12
-	108-6461-100	PLUG, Sealing	-	3
-	108-6461-023	RECEPTACLE, 12-Way Straight Backshell	-	1
11	108-6461-011	KIT, Deutsch Connector, DT Series, Straight	-	REF
-	108-6461-02P	PLUG, 2-Way	-	1
-	108-6461-2PW	PLUG, 2-Way Wedge	-	1
-	108-6461-102	SOCKET, Gold Plated	-	2
-	108-6461-100	PLUG, Sealing	-	1
-	108-6461-025	PLUG, 2-Way Straight Backshell	-	1
12	108-6461-012	KIT, Deutsch Connector, DT Series, Straight	-	REF
-	108-6461-02R	RECEPTACLE, 2-Way	-	1
-	108-6461-2RW	RECEPTACLE, 2-Way Wedge	-	1
-	108-6461-101	PIN, Gold Plated	-	2
-	108-6461-100	PLUG, Sealing	-	1
-	108-6461-013	RECEPTACLE, 2-Way Straight Backshell	-	1
13	108-7142	KIT, 12-Way Panel Mount Receptacle	-	REF

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DEUTSCH DT SERIES CONNECTOR KITS - 90° - 108-6461

ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	108-6461	KITS, Deutsch Connection, DT Series	-	REF
1	108-6461-041	KIT, Deutsch Connector, DT Series, 90º	-	REF
-	108-6461-03P	PLUG, 3-Way	-	1
-	108-6461-3PW	PLUG 3-Way Wedge	-	1
-	108-6461-102	SOCKET, Gold Plated	-	3
-	108-6461-100	PLUG, Sealing	-	2
-	108-6461-028	PLUG, 3-Way, 90º Backshell	-	1
2	108-6461-042	KIT, Deutsch Connector, DT Series, 90º	-	REF
-	108-6461-03R	RECEPTACLE, 3-Way	-	1
-	108-6461-3RW	RECEPTACLE, 3-Way Wedge	-	1
-	108-6461-101	PIN, Gold Plated	-	3
-	108-6461-100	PLUG, Sealing	-	2
-	108-6461-016	RECEPTACLE, 3-Way 90º Backshell	-	1
3	108-6461-043	KIT, Deutsch Connector, DT Series, 90º	-	REF
-	108-6461-04P	PLUG, 4-Way	-	1
-	108-6461-4PW	PLUG, 4-Way Wedge	-	1
-	108-6461-102	SOCKET, Gold Plated	-	4
-	108-6461-100	PLUG, Sealing	-	1
-	108-6461-030	PLUG, 4-Way 90º Backshell	-	1
4	108-6461-044	KIT, Deutsch Connector, DT Series, 90º	-	REF
-	108-6461-04R	RECEPTACLE, 4-Way	-	1
-	108-6461-4RW	RECEPTACLE, 4-Way Wedge	-	1
-	108-6461-101	PIN, Gold Plated	-	4
-	108-6461-100	PLUG, Sealing	-	1
-	108-6461-018	RECEPTACLE, 4-Way 90º Backshell	-	1
5	108-6461-045	KIT, Deutsch Connector, DT Series, 90º	-	REF
-	108-6461-06P	PLUG, 6-Way	-	1
-	108-6461-6PW	PLUG, 6-Way Wedge	-	1
-	108-6461-102	SOCKET, Gold Plated	-	6
-	108-6461-100	PLUG, Sealing	-	1
-	108-6461-032	PLUG, 6-Way 90º Backshell	-	1
6	108-6461-046	KIT, Deutsch Connector, DT Series, 90º	-	REF
-	108-6461-06R	RECEPTACLE, 6-Way	-	1
-	108-6461-6RW	RECEPTACLE, 6-Way Wedge	-	1
-	108-6461-101	PIN, Gold Plated	-	6
-	108-6461-100	PLUG, Sealing	-	1
-	108-6461-020	RECEPTACLE, 6-way 90º Backshell	-	1
7	108-6461-047	KIT, Deutsch Connector, DT Series, 90º	-	REF
-	108-6461-08P	PLUG, 8-Way	-	1
-	108-6461-8PW	PLUG, 8-Way Wedge	-	1
-	108-6461-102	SOCKET, Gold Plated	-	8
-	108-6461-100	PLUG, Sealing	-	1
-	108-6461-034	PLUG, 8-Way 90º Backshell	-	1

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DEUTSCH DT SERIES CONNECTOR KITS - 90° - 108-6461 - CONTINUED

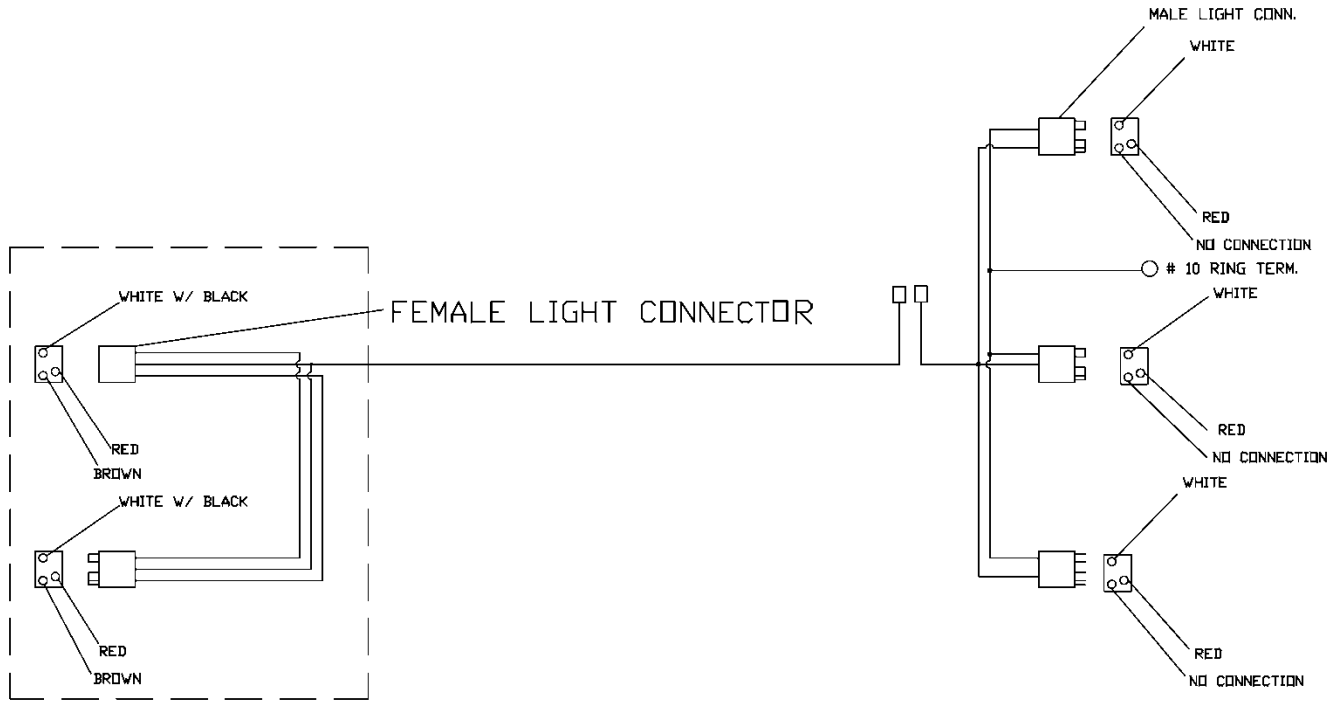
ITEM	PART NO.	DESCRIPTION	EFF	QTY
-	108-6461	KITS, Deutsch Connection, DT Series	-	REF
8	108-6461-048	KIT, Deutsch Connector, DT Series, 90º	-	REF
-	108-6461-08R	RECEPTACLE, 8-Way	-	1
-	108-6461-8RW	RECEPTACLE, 8-Way Wedge	-	1
-	108-6461-101	PIN, Gold Plated	-	8
-	108-6461-100	PLUG, Sealing	-	1
-	108-6461-022	RECEPTACLE, 8-Way 90º Backshell	-	1
9	108-6461-049	KIT, Deutsch Connector, DT Series, 90º	-	REF
-	108-6461-12P	PLUG, 12-Way	-	1
-	108-6461-CPW	PLUG, 12-Way Wedge	-	1
-	108-6461-102	SOCKET, Gold Plated	-	12
-	108-6461-100	PLUG, Sealing	-	3
-	108-6461-036	PLUG, 12-Way 90º Backshell	-	1
10	108-6461-050	KIT, Deutsch Connector, DT Series, 90º	-	REF
-	108-6461-12R	RECEPTACLE, 12-Way	-	1
-	108-6461-CRW	RECEPTACLE, 12-Way Wedge	-	1
-	108-6461-101	PIN, Gold Plated	-	12
-	108-6461-100	PLUG, Sealing	-	3
-	108-6461-024	RECEPTACLE, 12-Way 90º Backshell	-	1
11	108-6461-051	KIT, Deutsch Connector, DT Series, 90º	-	REF
-	108-6461-02P	PLUG, 2-Way	-	1
-	108-6461-2PW	PLUG, 2-Way Wedge	-	1
-	108-6461-102	SOCKET, Gold Plated	-	2
-	108-6461-100	PLUG, Sealing	-	1
-	108-6461-026	PLUG, 2-Way 90º Backshell	-	1
12	108-6461-052	KIT, Deutsch Connector, DT Series, 90º	-	REF
-	108-6461-02R	RECEPTACLE, 2-Way	-	1
-	108-6461-2RW	RECEPTACLE, 2-Way Wedge	-	1
-	108-6461-101	PIN, Gold Plated	-	2
-	108-6461-100	PLUG, Sealing	-	1
-	108-6461-014	RECEPTACLE, 2-Way 90º Backshell	-	1

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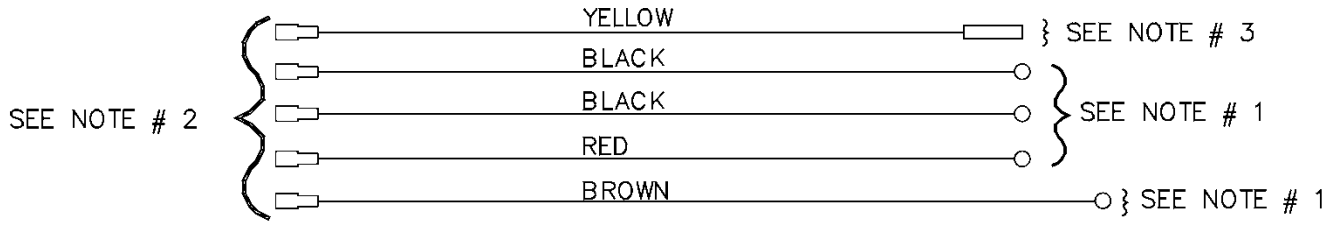
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BRAKE LIGHT HARNESS – 108-6186



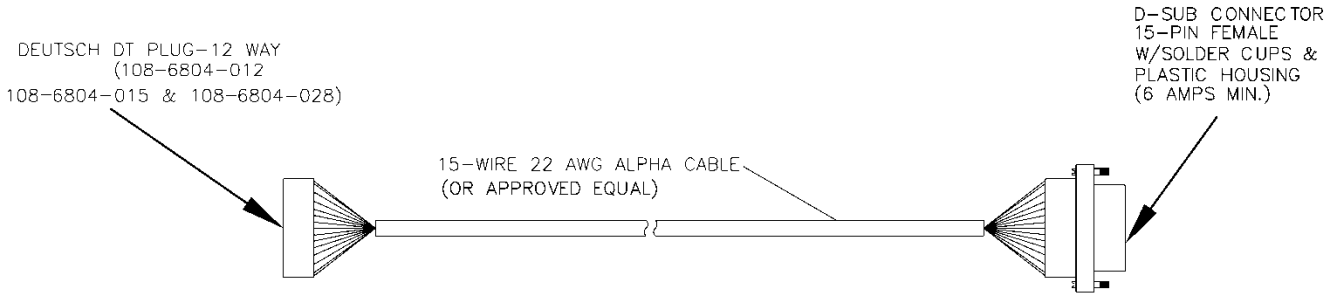
TEMPERATURE GAUGE HARNESS – 108-6509



NOTES:
1) ALL #10 RING TERMINALS
2) ALL 1/4" PUSH ON CONNECTORS
3) ALL 12–14 BUTT CONNECTORS
4) ALL 16 GA. 26 STRAND WIRE
5) WIRE TO EXCEED SAE J1128 SPEC.

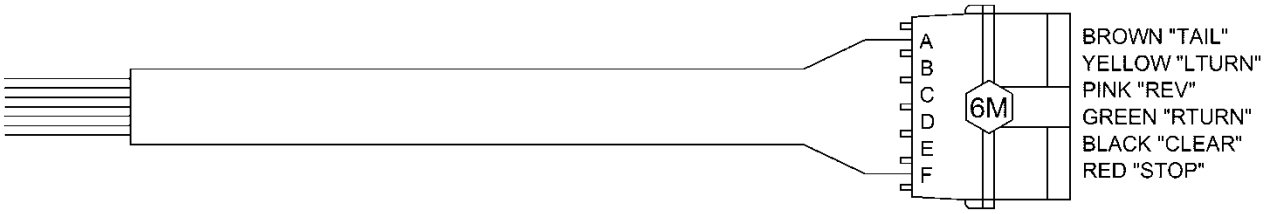
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LOGIC BOX HARNESS – 108-6805



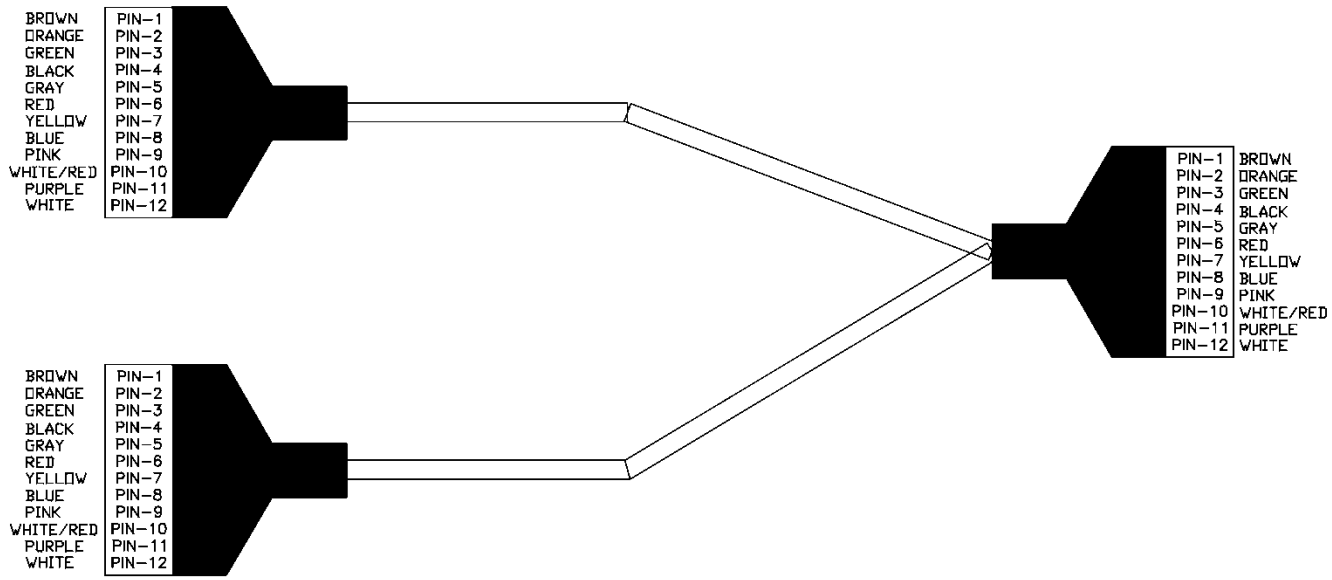
WIRE COLOR	DEUTSCH PLUG TERMINAL	D–SUB PIN
WHITE	1	9
BROWN	1	1
ORANGE	2	3
TAN	2	11
GREEN	3	5
BLACK	4	10
PINK	5	12
RED	6	2
YELLOW	7	4
BLUE	8	6
RED/BLACK	8	13
VIOLET	11	7
RED/YELLOW	11	14
GRAY	12	8
RED/GREEN	12	15

CHASSIS LIGHT HARNESS – 263-0075



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PLUG IN CONTROLS SPLITTER HARNESS – 263-0093



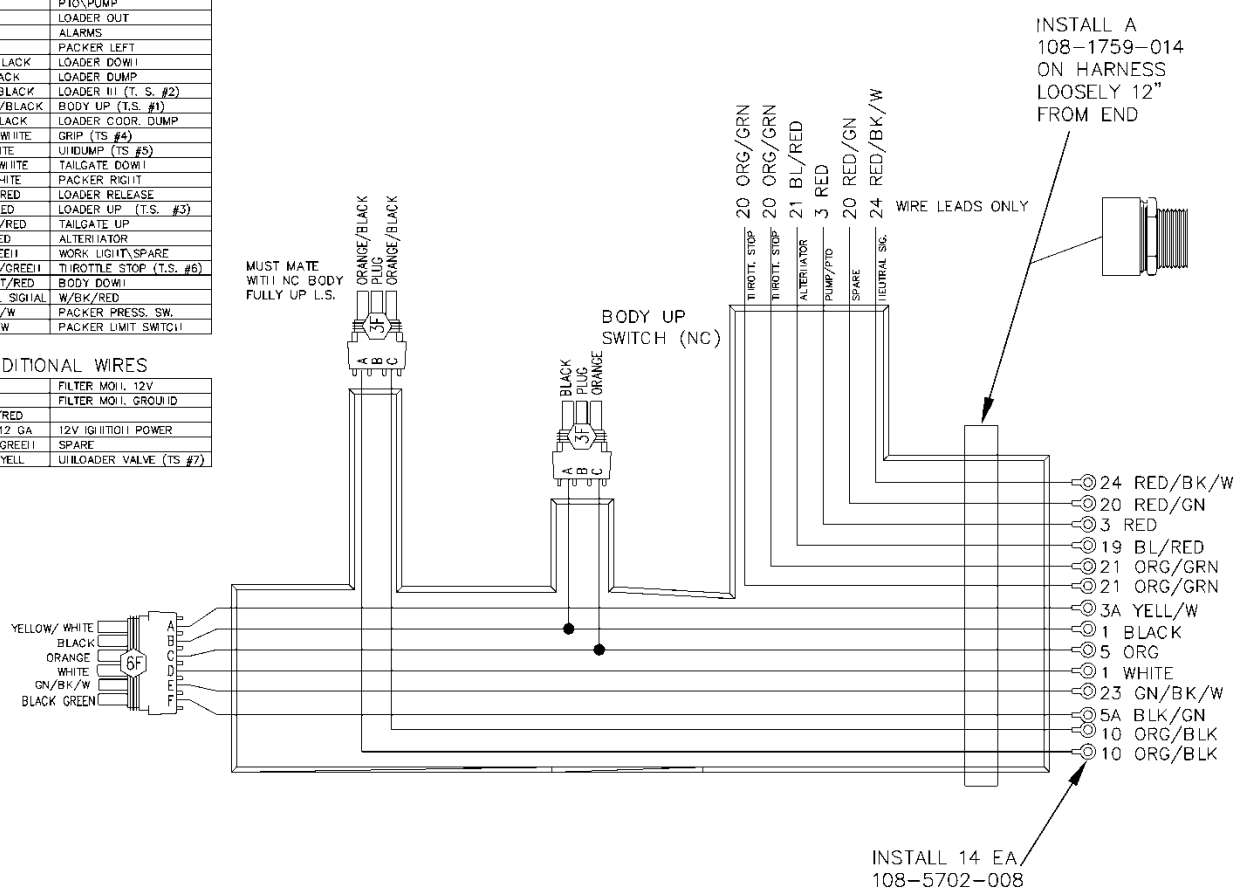
WIRE COLOR	DEUTSCH PLUG TERMINAL	ROCKER SWITCH
BROWN	1	GRIP
ORANGE	2	RELEASE
GREEN	3	OUT
BLACK	4	IN
GRAY	5	DOWN
RED	6	UP
YELLOW	7	DUMP
BLUE	8	UNDUMP
PINK	9	OPTION
WHITE/RED	10	OPTION
PURPLE	11	+12V POWER
WHITE	12	-

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CHASSIS HARNESS – 263-0281

25 WIRE CABLE COLOR CODE		
WIRE NO.	WIRE COLOR	JUNCTION BOX TERMINAL TO CONNECT TO
1	BLACK	12V POWER (T.S. #1)
2	WHITE	GROUND
3	RED	PTO\PUMP
4	GREEN	LOADER OUT
5	ORANGE	ALARMS
6	BLUE	PACKER LEFT
7	WHITE/BLACK	LOADER DOWN
8	RED/BLACK	LOADER DUMP
9	GREEN/BLACK	LOADER IN (T. S. #2)
10	ORANGE/BLACK	BODY UP (T.S. #1)
11	BLUE/BLACK	LOADER COOR. DUMP
12	BLACK/WHITE	GRIP (TS #4)
13	RED/WHITE	UNDUMP (TS #5)
14	GREEN/WHITE	TAILGATE DOWN
15	BLUE/WHITE	PACKER RIGHT
16	BLACK/RED	LOADER RELEASE
17	WHITE/RED	LOADER UP (T.S. #3)
18	ORANGE/RED	TAILGATE UP
19	BLUE/RED	ALTERNATOR
20	RED/GREEN	WORK LIGHT\SPARE
21	ORANGE/GREEN	THROTTLE STOP (T.S. #6)
22	BLK/WHT/RED	BODY DOWN
23	NEUTRAL SIGNAL	W/BK/RED
24	RED/BK/W	PACKER PRESS. SW.
25	GN/BK/W	PACKER LIMIT SWITCH

ADDITIONAL WIRES		
1A	BLACK	FILTER MON. 12V
2A	WHITE	FILTER MON. GROUND
3A	YELLOW/RED	
4A	BLACK 12 GA	12V IGNITION POWER
5A	BLACK/GREEN	SPARE
6A	BLACK/YELL	UNLOADER VALVE (TS #7)

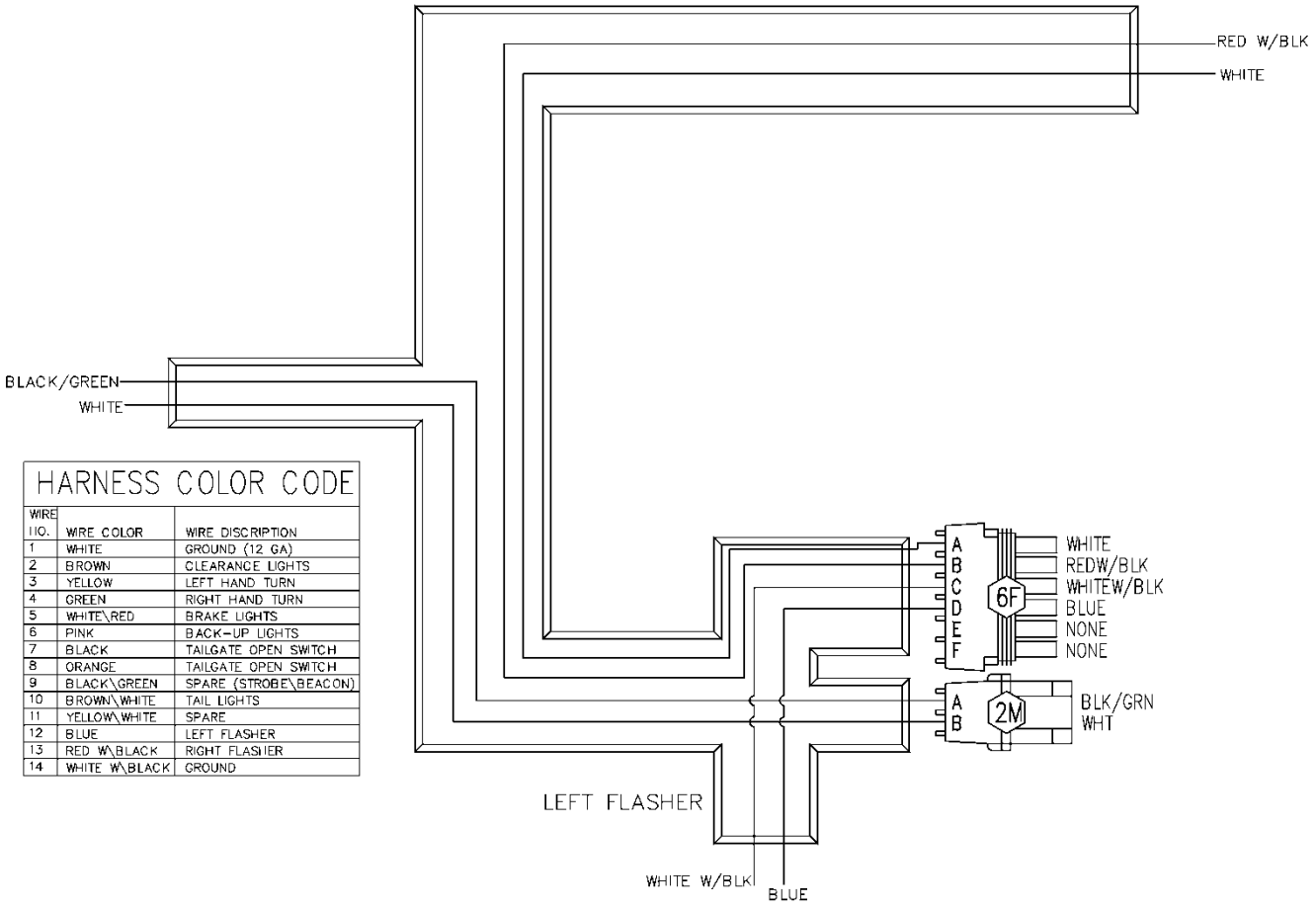


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FLASHER HARNESS – 263-0655



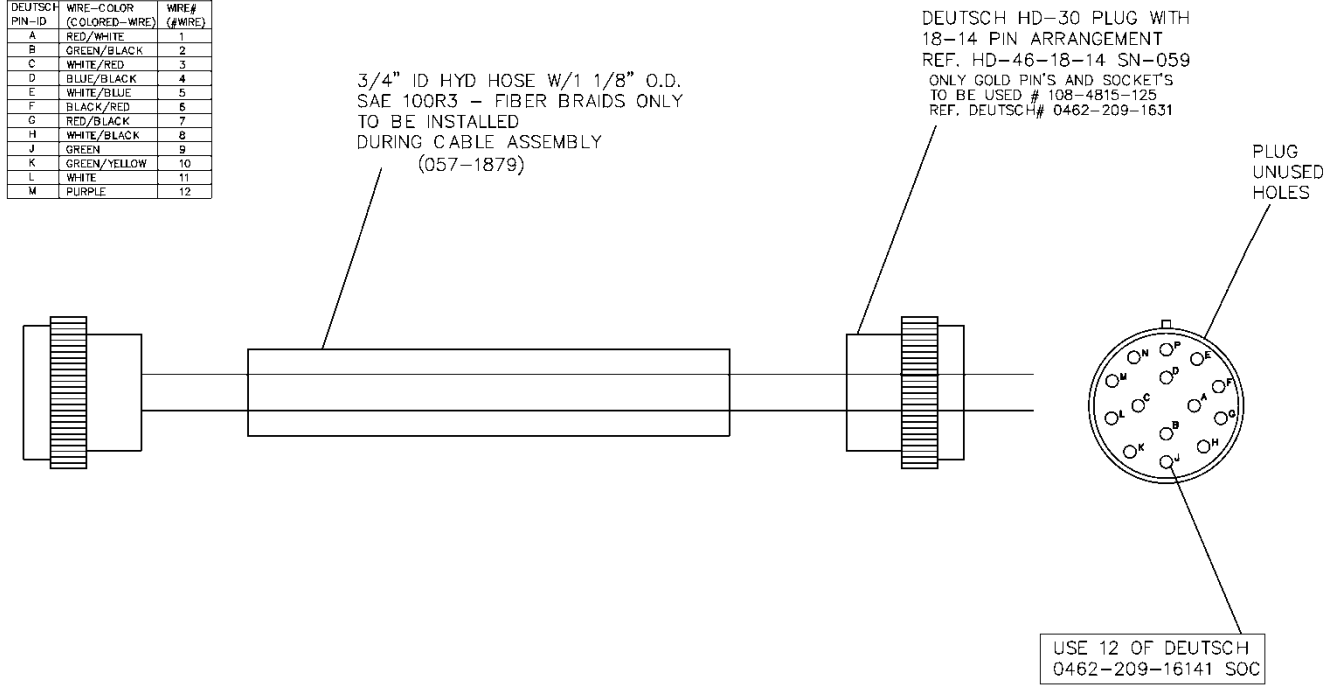
HARNESS COLOR CODE

WIRE NO.	WIRE COLOR	WIRE DISCRIPTION
1	WHITE	GROUND (12 GA)
2	BROWN	CLEARANCE LIGHTS
3	YELLOW	LEFT HAND TURN
4	GREEN	RIGHT HAND TURN
5	WHITE\RED	BRAKE LIGHTS
6	PINK	BACK-UP LIGHTS
7	BLACK	TAILGATE OPEN SWITCH
8	ORANGE	TAILGATE OPEN SWITCH
9	BLACK\GREEN	SPARE (STROBE\BEACON)
10	BROWN\WHITE	TAIL LIGHTS
11	YELLOW\WHITE	SPARE
12	BLUE	LEFT FLASHER
13	RED W\BLACK	RIGHT FLASHER
14	WHITE W\BLACK	GROUND

MIDDLE LOADER HARNESS – 263-0675-002

HARNESS CODES

DEUTSCH PIN-ID	WIRE-COLOR (COLORED-WIRE)	WIRE# (#WIRE)
A	RED/WHITE	1
B	GREEN/BLACK	2
C	WHITE/RED	3
D	BLUE/BLACK	4
E	WHITE/BLUE	5
F	BLACK/RED	6
G	RED/BLACK	7
H	WHITE/BLACK	8
J	GREEN	9
K	GREEN/YELLOW	10
L	WHITE	11
M	PURPLE	12

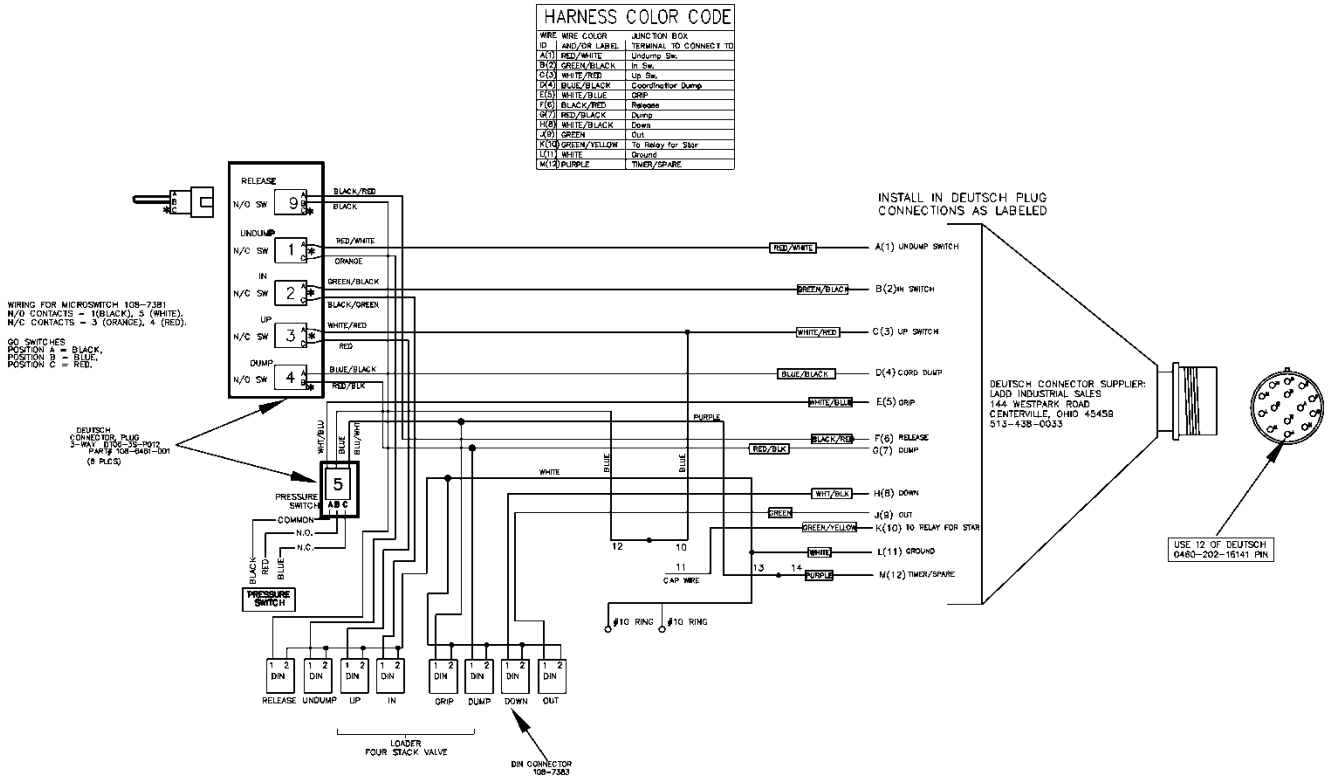


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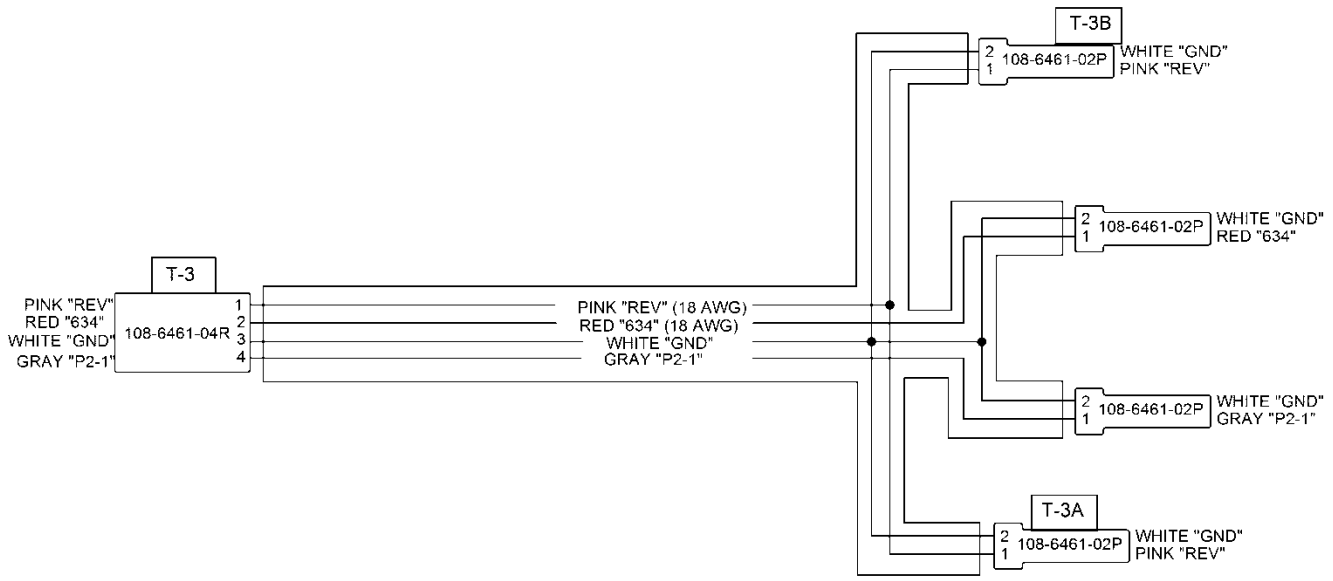
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VALVE END LOADER HARNESS – 263-0675-005



TAILGATE MIDDLE CLUSTER CAMERA FLOOD LIGHT HARNESS – 263-0891-004

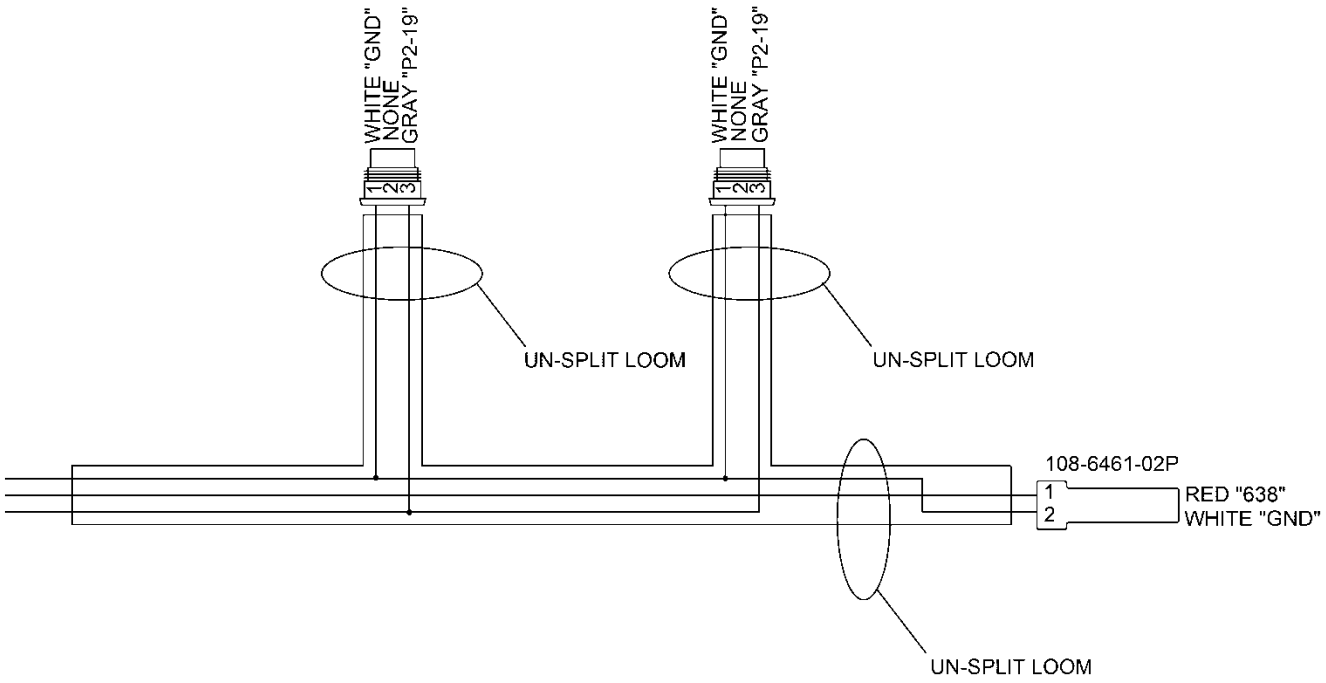


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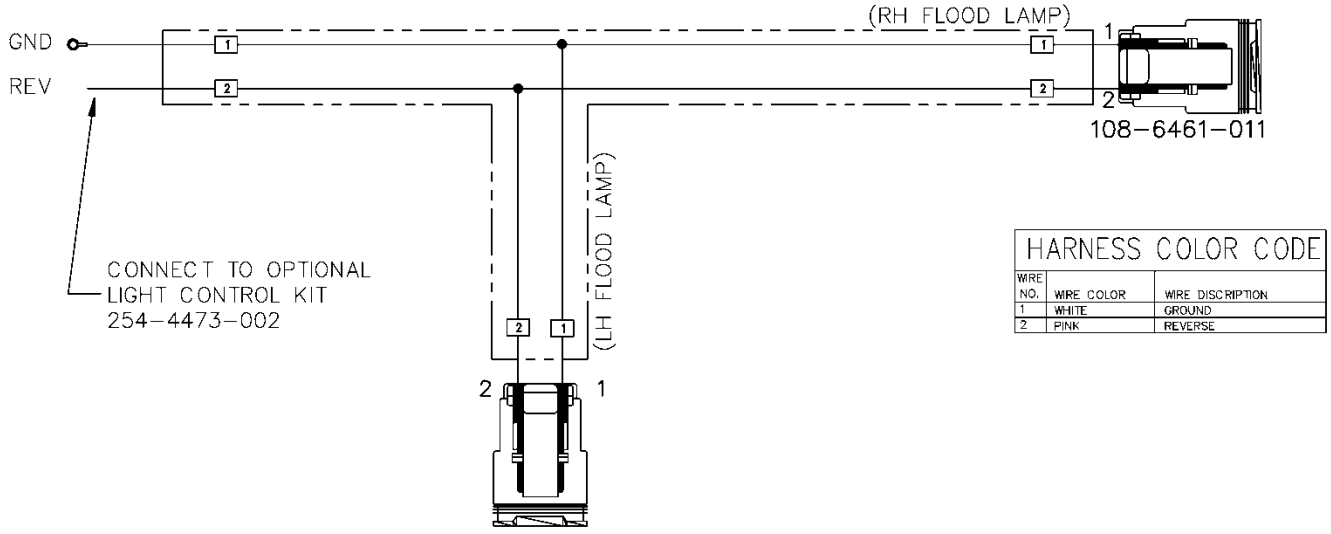
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SCHEMATICS

MACK LE ALLIED CAB MOUNTED STROBES/FLOOD LIGHT HARNESS – 263-0899-001



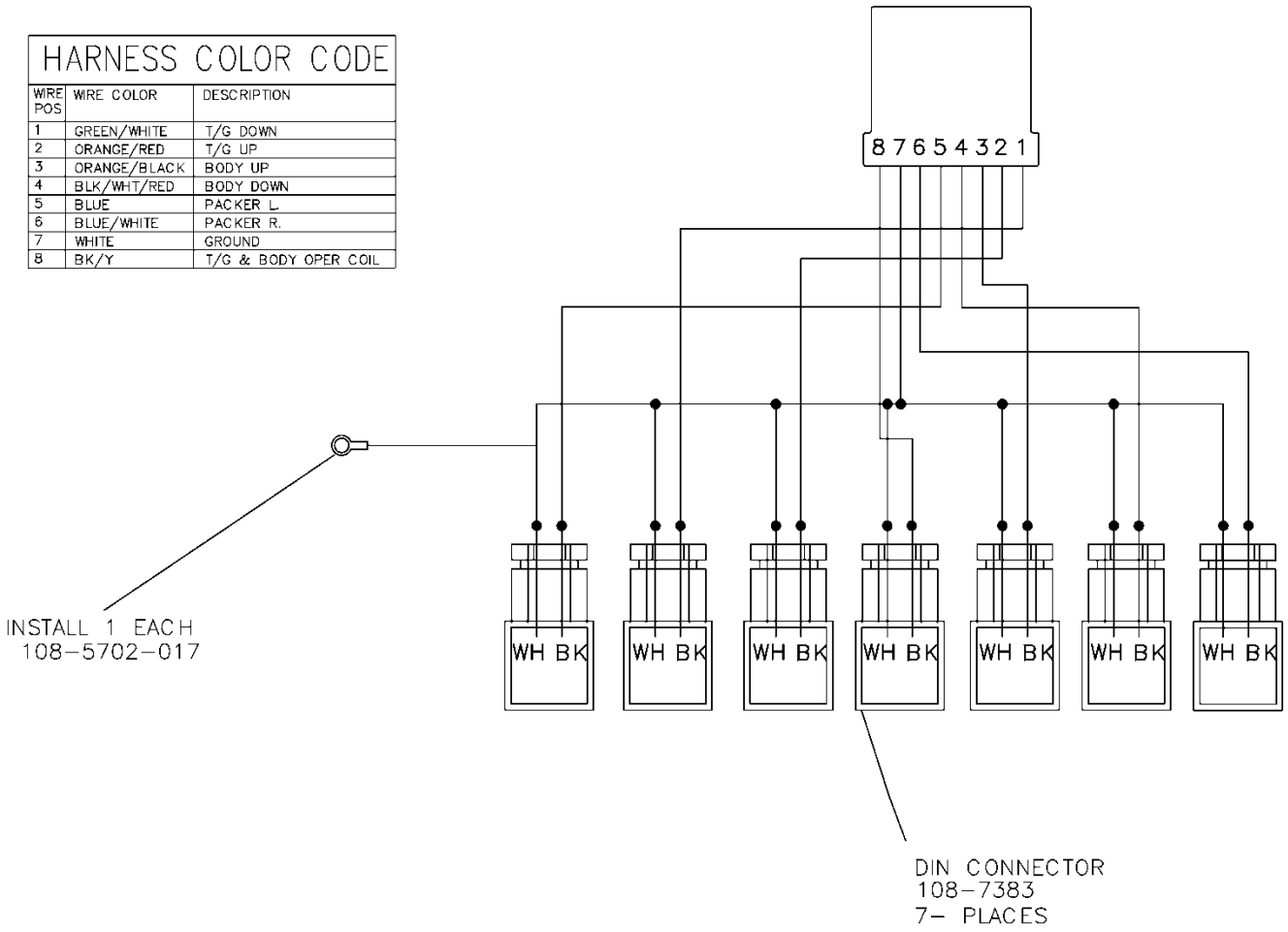
SIDE FLOOD LAMP HARNESS – 263-0942



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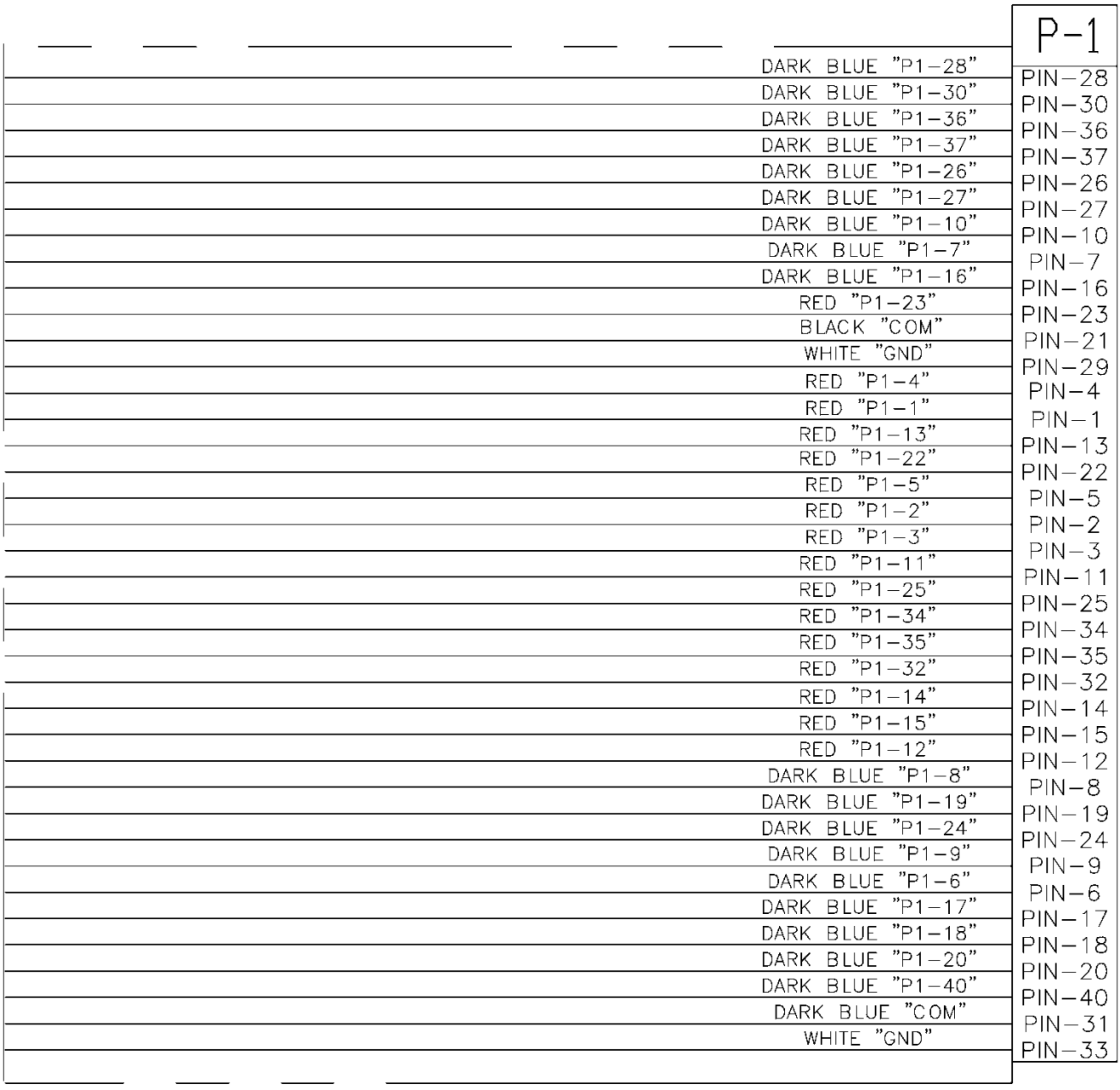
Rapid Rail® Co Collector
SCHEMATICS
VICKERS PACKER VALVE HARNESS – 263-1040

HARNESS COLOR CODE		
WIRE POS	WIRE COLOR	DESCRIPTION
1	GREEN/WHITE	T/G DOWN
2	ORANGE/RED	T/G UP
3	ORANGE/BLACK	BODY UP
4	BLK/WHT/RED	BODY DOWN
5	BLUE	PACKER L.
6	BLUE/WHITE	PACKER R.
7	WHITE	GROUND
8	BK/Y	T/G & BODY OPER COIL



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Rapid Rail® Co Collector
SCHEMATICS
CONTROL PANEL HARNESS – 263-1058-001

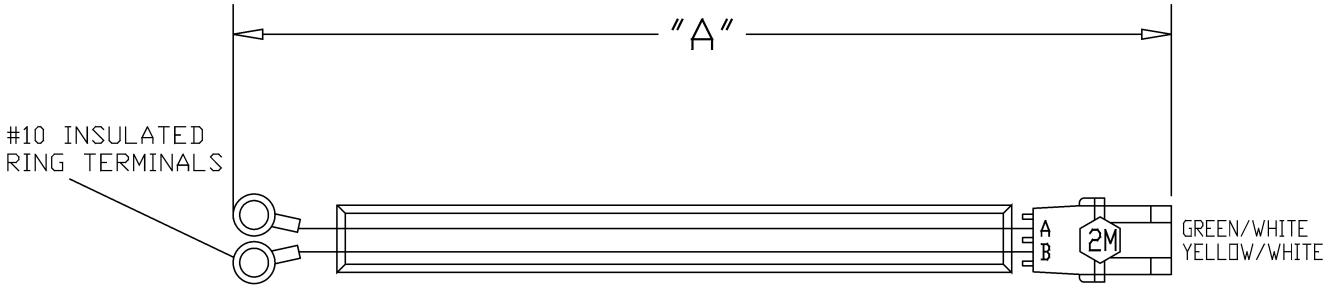


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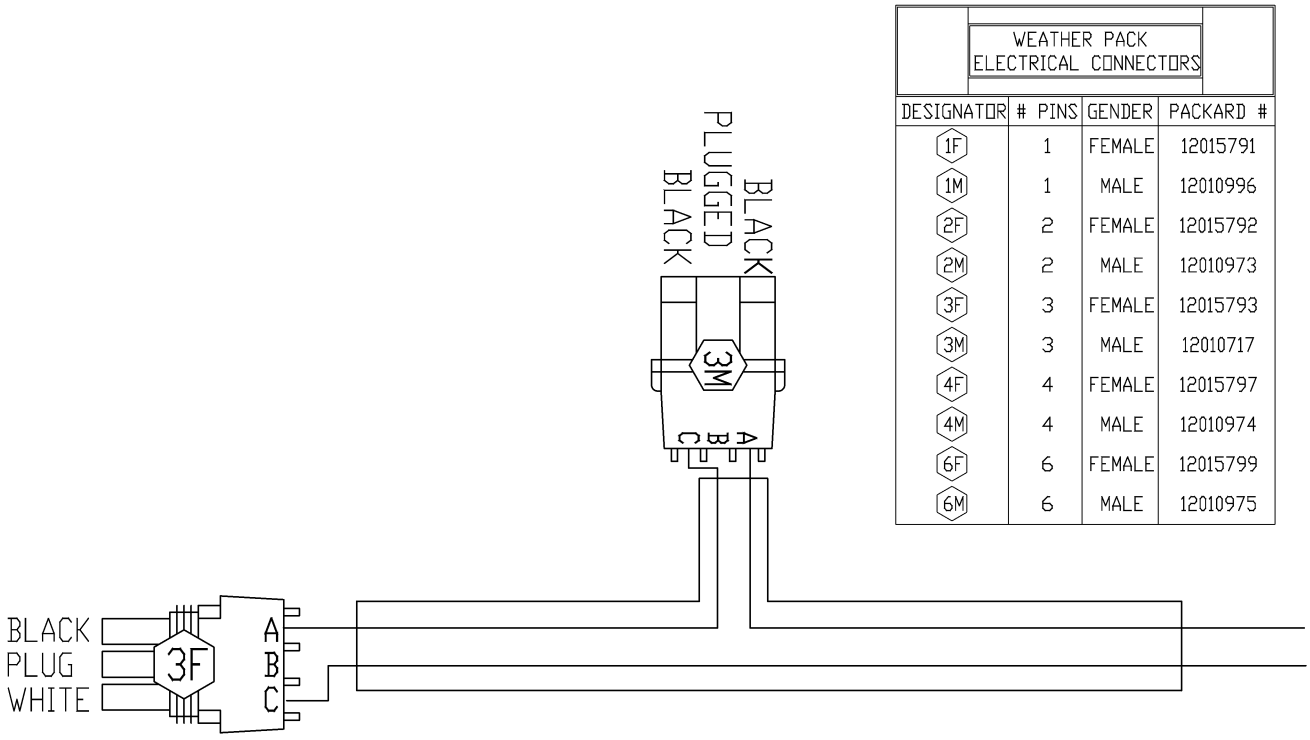
SCHEMATICS

MID-BODY LIGHT CHASSIS CONNECTION HARNESS – 263-1060-320



PART NUMBER	"A"
263-1060-320	320.00"

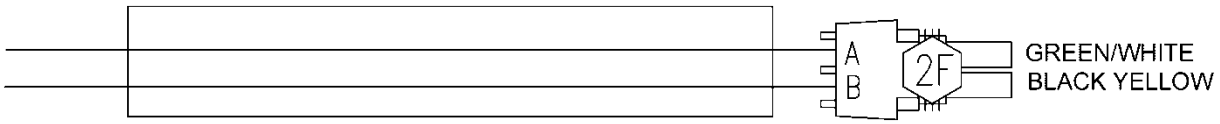
INTERLINK BODY RAISE HARNESS – 263-1153



WEATHER PACK ELECTRICAL CONNECTORS

DESIGNATOR	# PINS	GENDER	PACKARD #
1F	1	FEMALE	12015791
1M	1	MALE	12010996
2F	2	FEMALE	12015792
2M	2	MALE	12010973
3F	3	FEMALE	12015793
3M	3	MALE	12010717
4F	4	FEMALE	12015797
4M	4	MALE	12010974
6F	6	FEMALE	12015799
6M	6	MALE	12010975

OIL LEVEL WARNING HARNESS – 263-1162

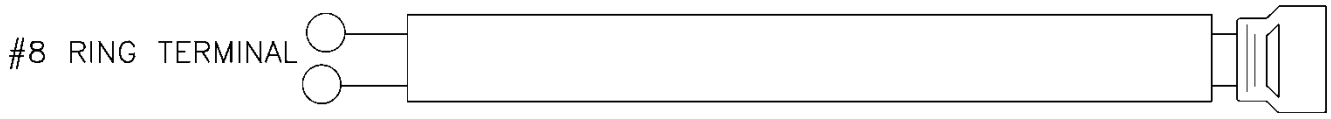


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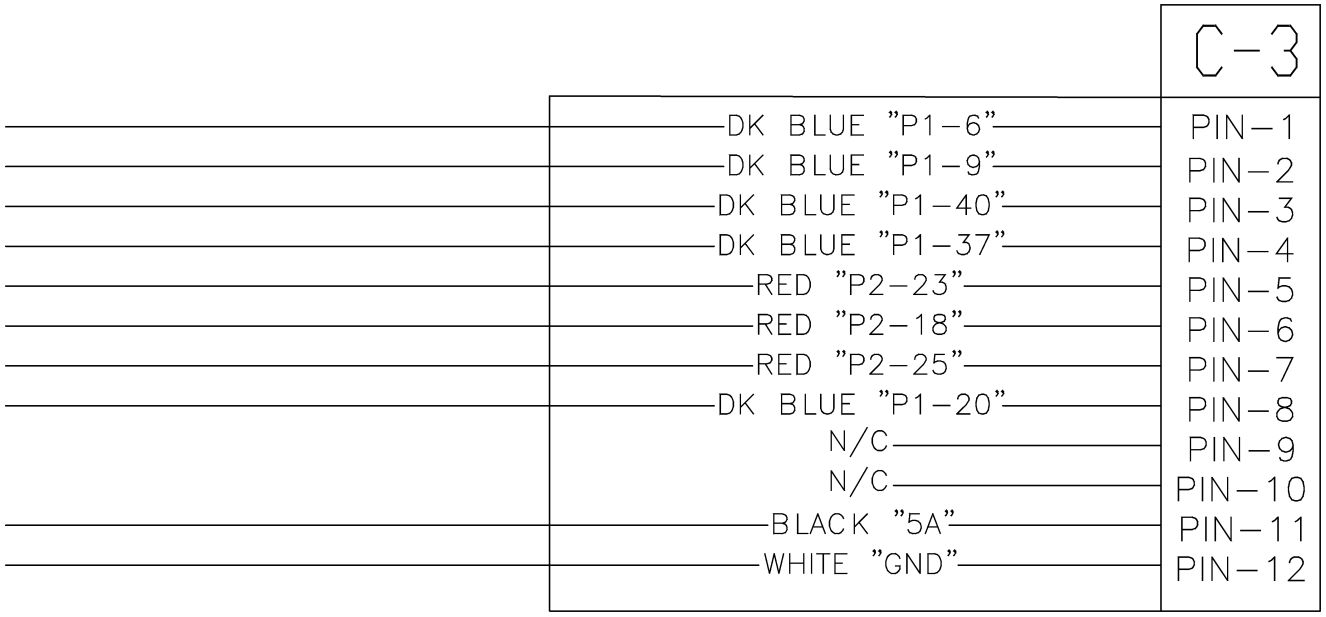
Rapid Rail® Co Collector

SCHEMATICS

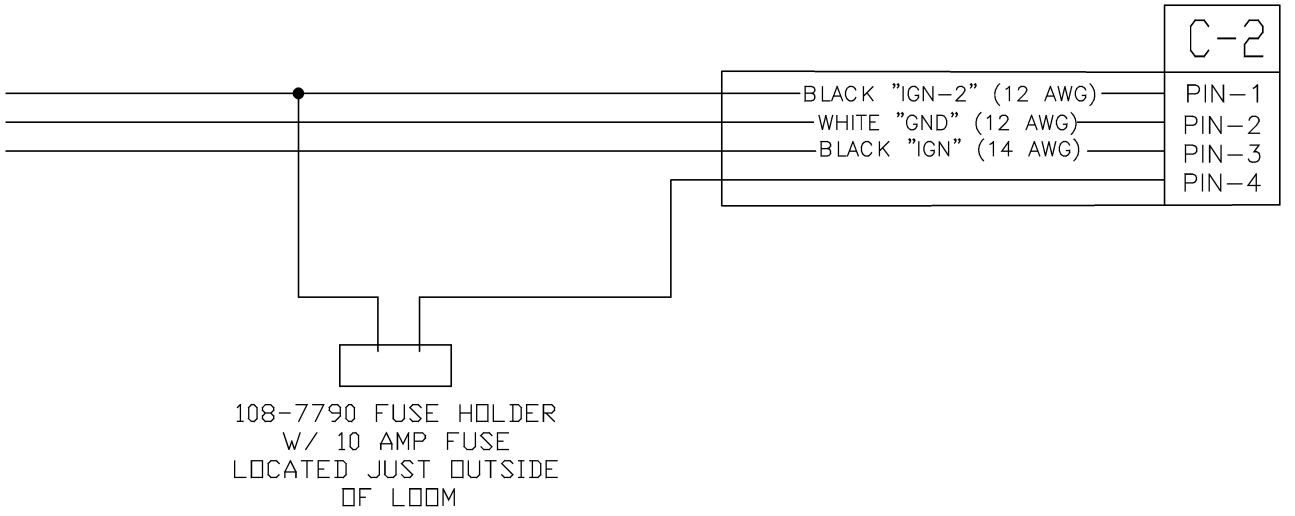
ALARM ADAPTER HARNESS – 263-1309-002



CONTROL HARNESS – 263-1412-001



CONTROL PANEL HARNESS – 263-1412-002

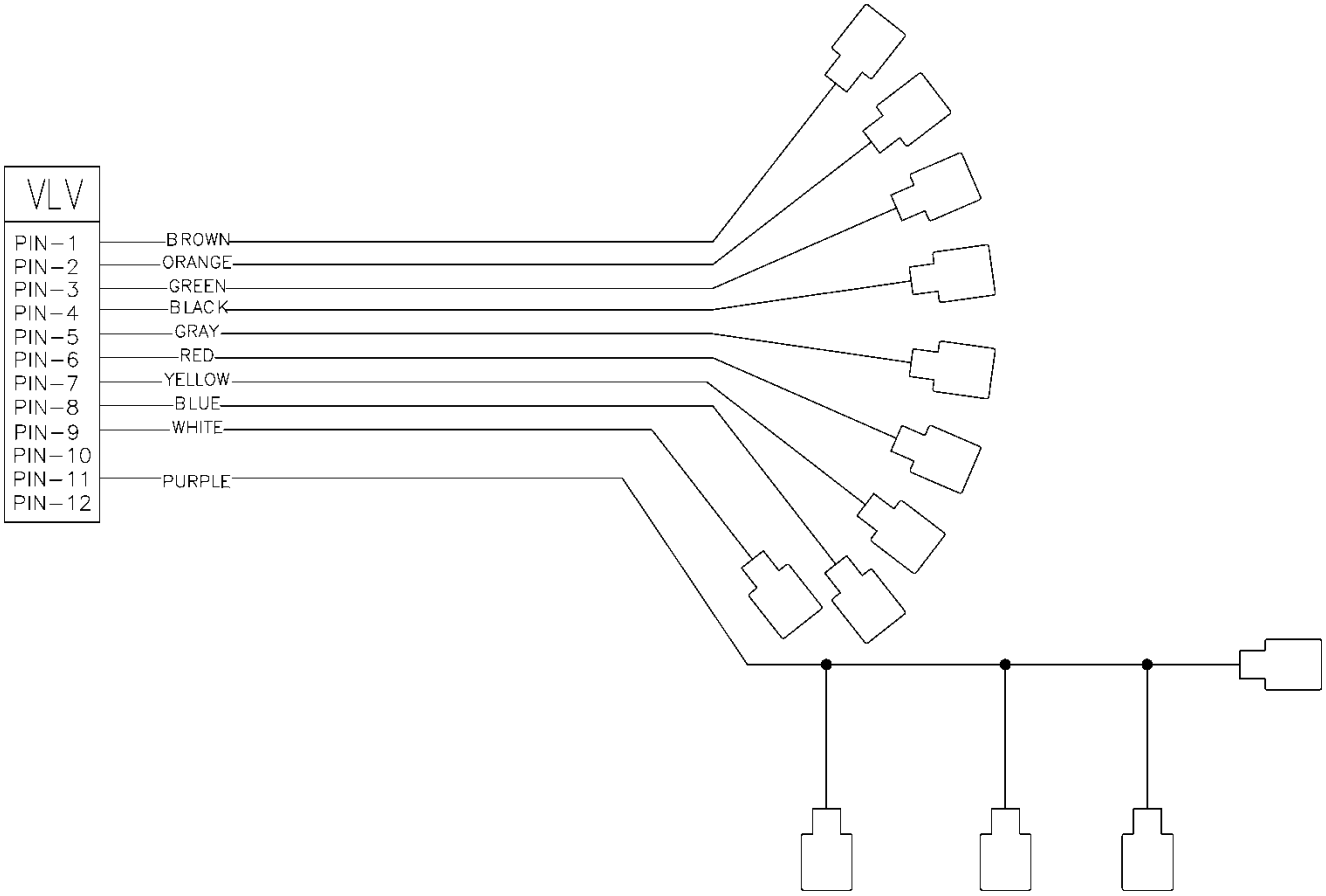


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Rapid Rail® Co Collector

SCHEMATICS

4-BUTTON CONTROL HARNESS – 263-1436-014

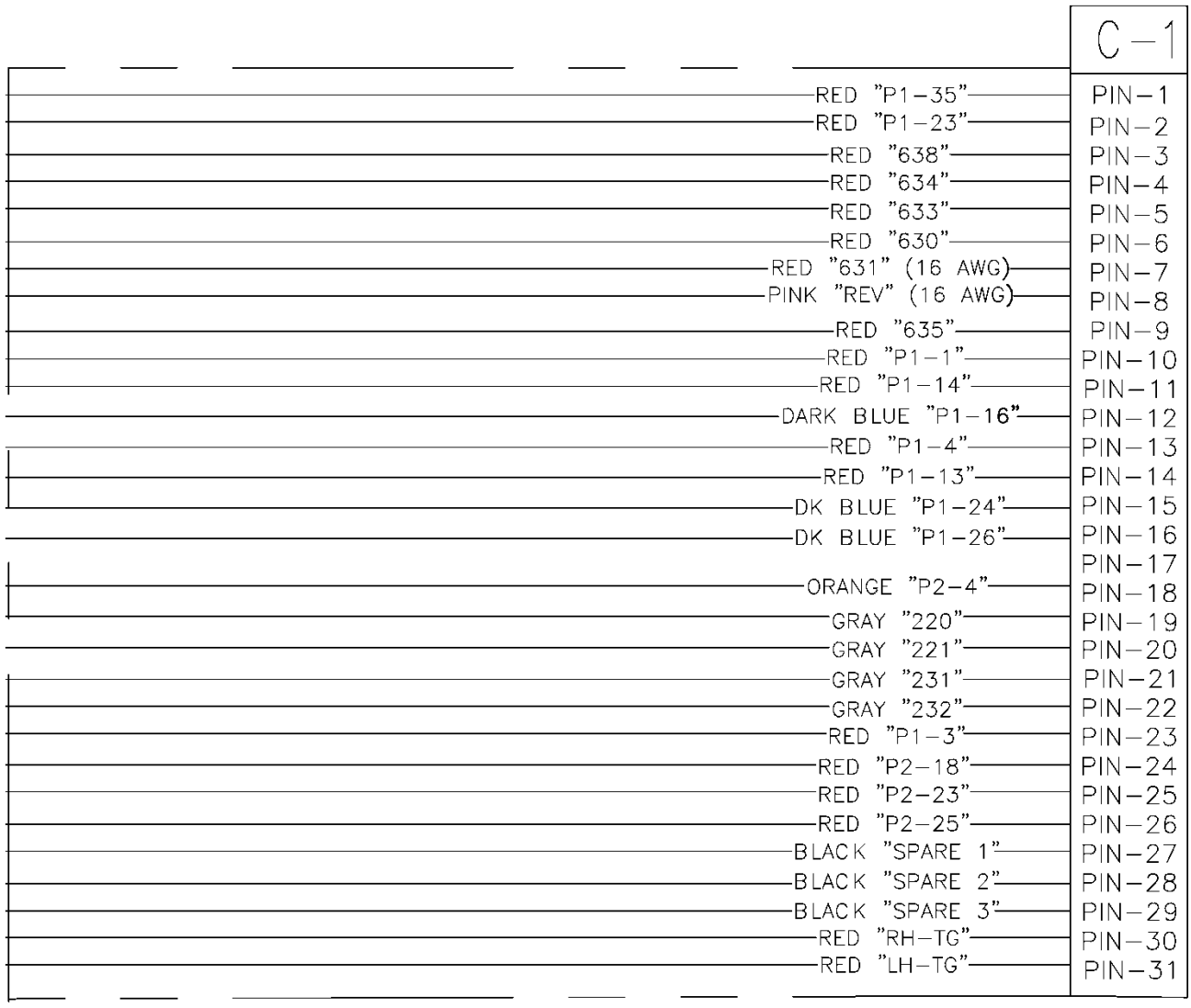


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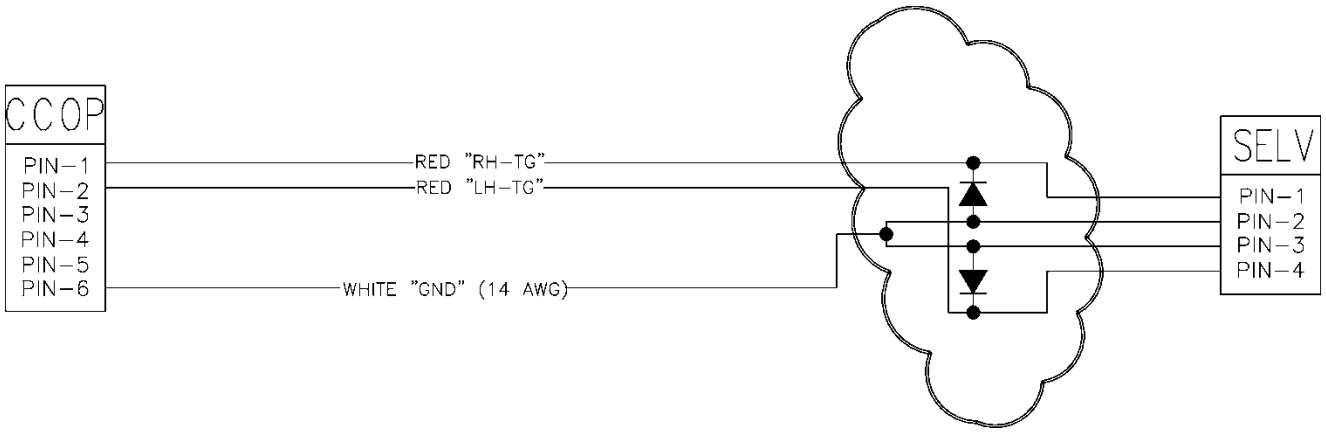
Rapid Rail® Co Collector

SCHEMATICS

PLC/CAB TO BODY HARNESS – 263-1436-016



SELECTOR VALVE HARNESS – 263-1436-019

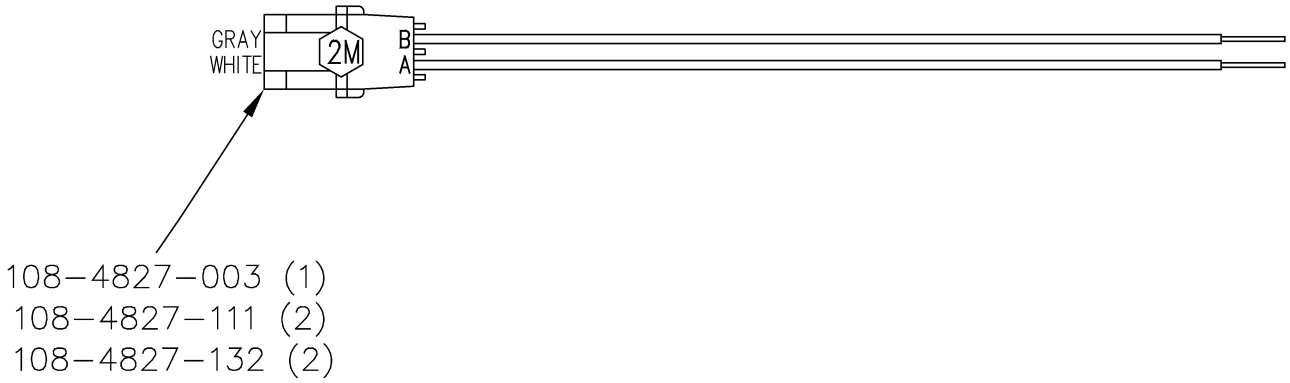


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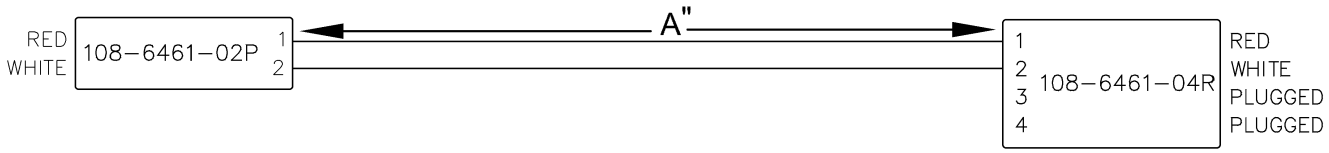
Rapid Rail® Co Collector

SCHEMATICS

CYCLE COUNTER HARNESS – 263-1502

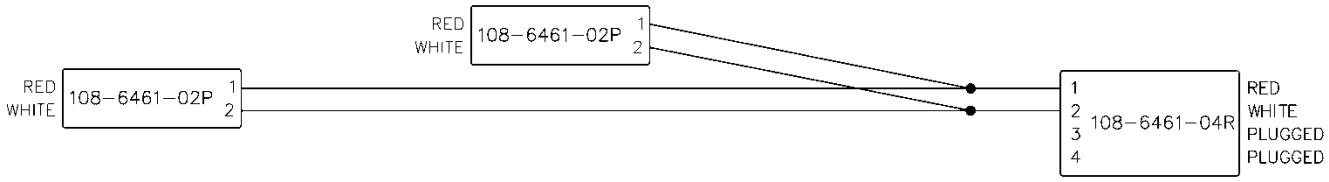


WORK LIGHT HARNESS – 263-1513, 263-1514



PART NUMBER	"A"
263-1513	36"
263-1514	144"

GRABBER/HOPPER WORK LIGHT HARNESS – 263-1515

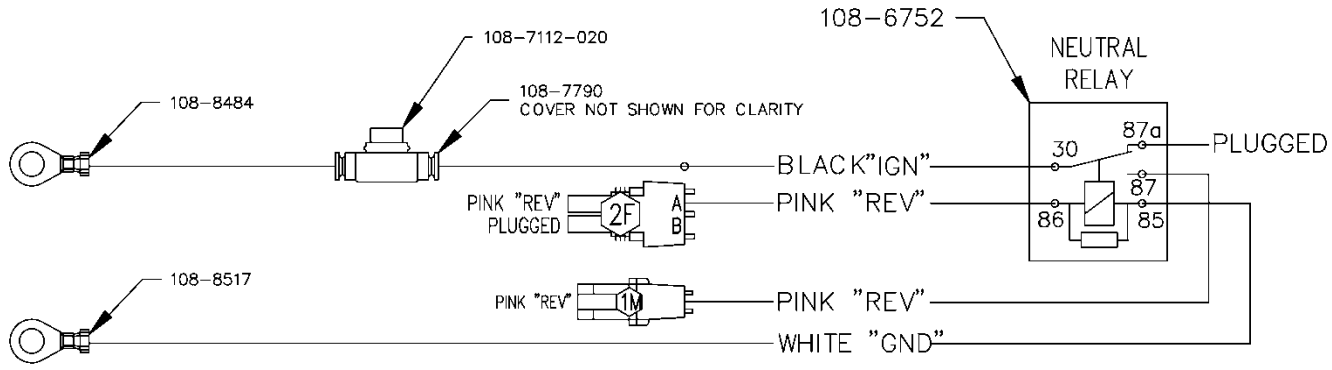


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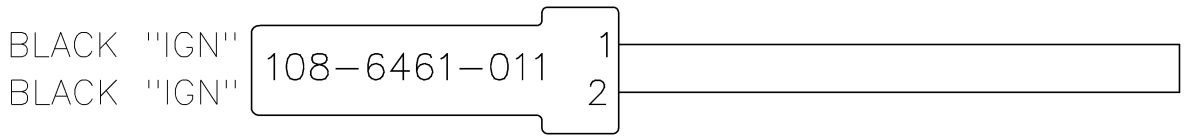
Rapid Rail® Co Collector

SCHEMATICS

PETERBILT RELAY REVERSE SIGNAL HARNESS – 263-1541



TRANSMISSION TEMPERATURE JUMPER HARNESS – 263-1565-001

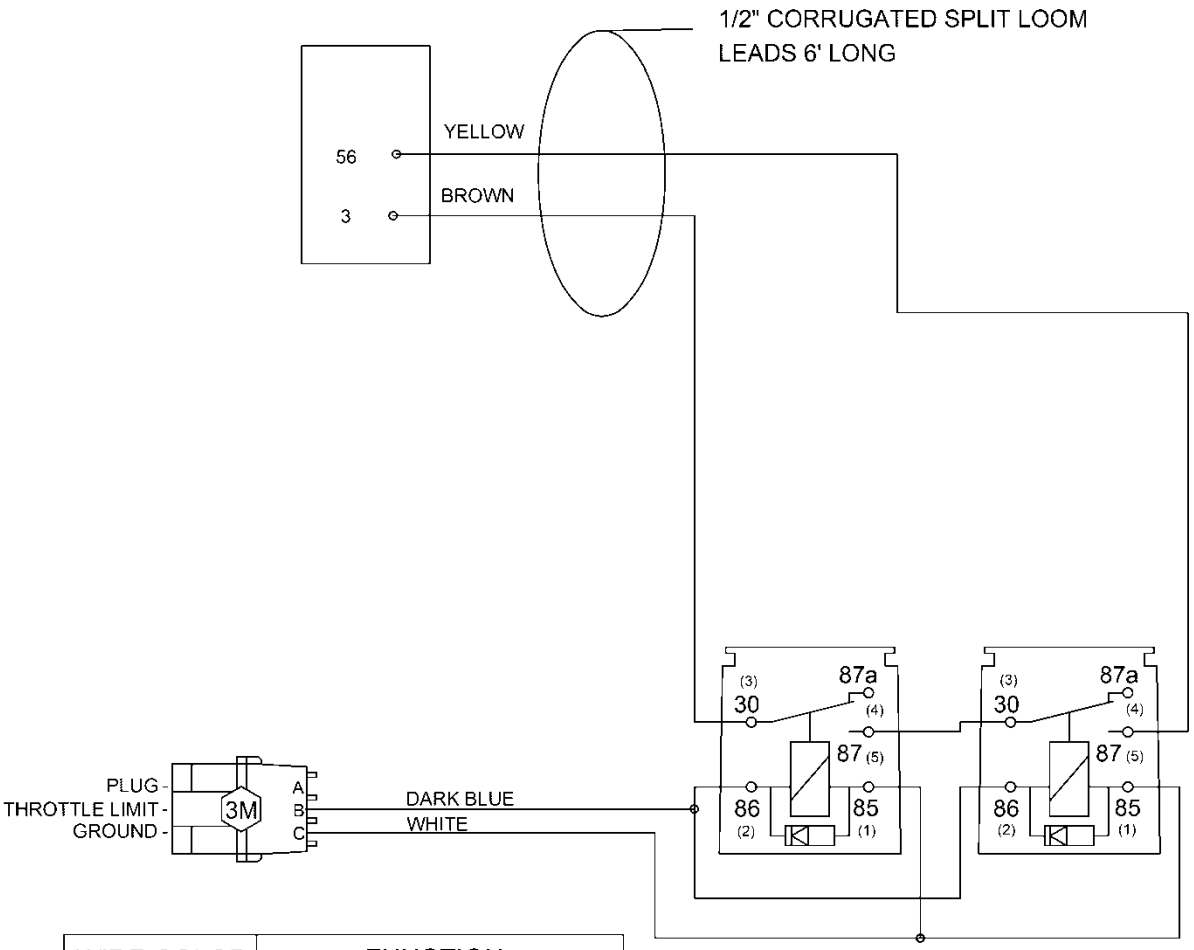


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Rapid Rail® Co Collector

SCHEMATICS

DUMMY ELECTRONIC THROTTLE LIMIT KIT - 272-8000-013



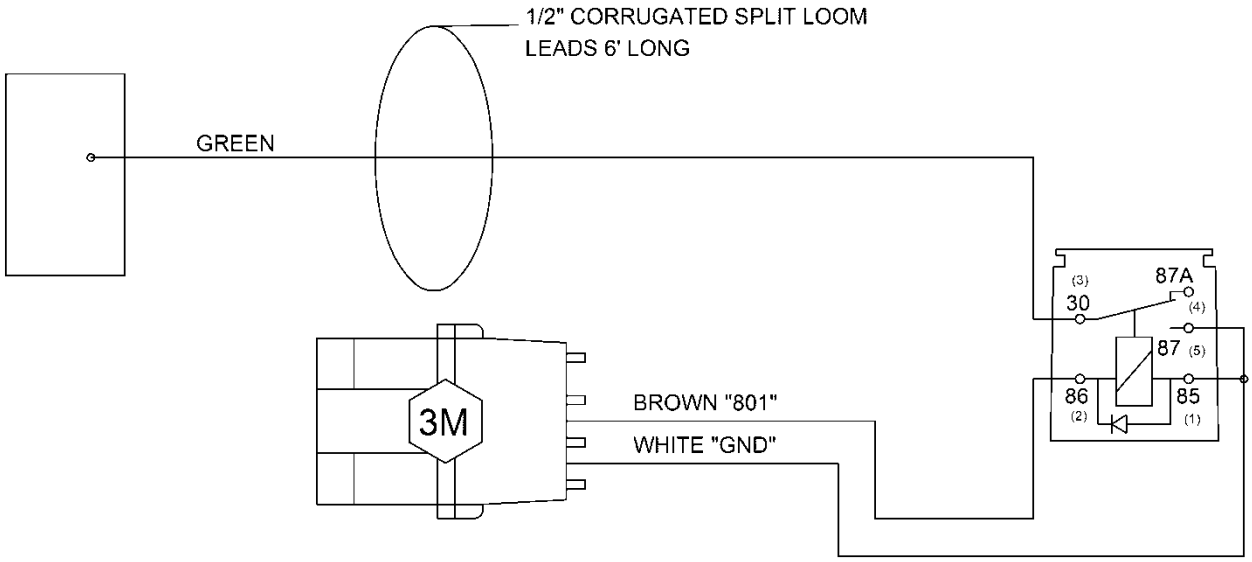
WIRE COLOR	FUNCTION
DARK BLUE	THROTTLE LIMIT
WHITE	GROUND
YELLOW	INPUT #1 PTO (ON/OFF)
BROWN	SENSOR COMMON

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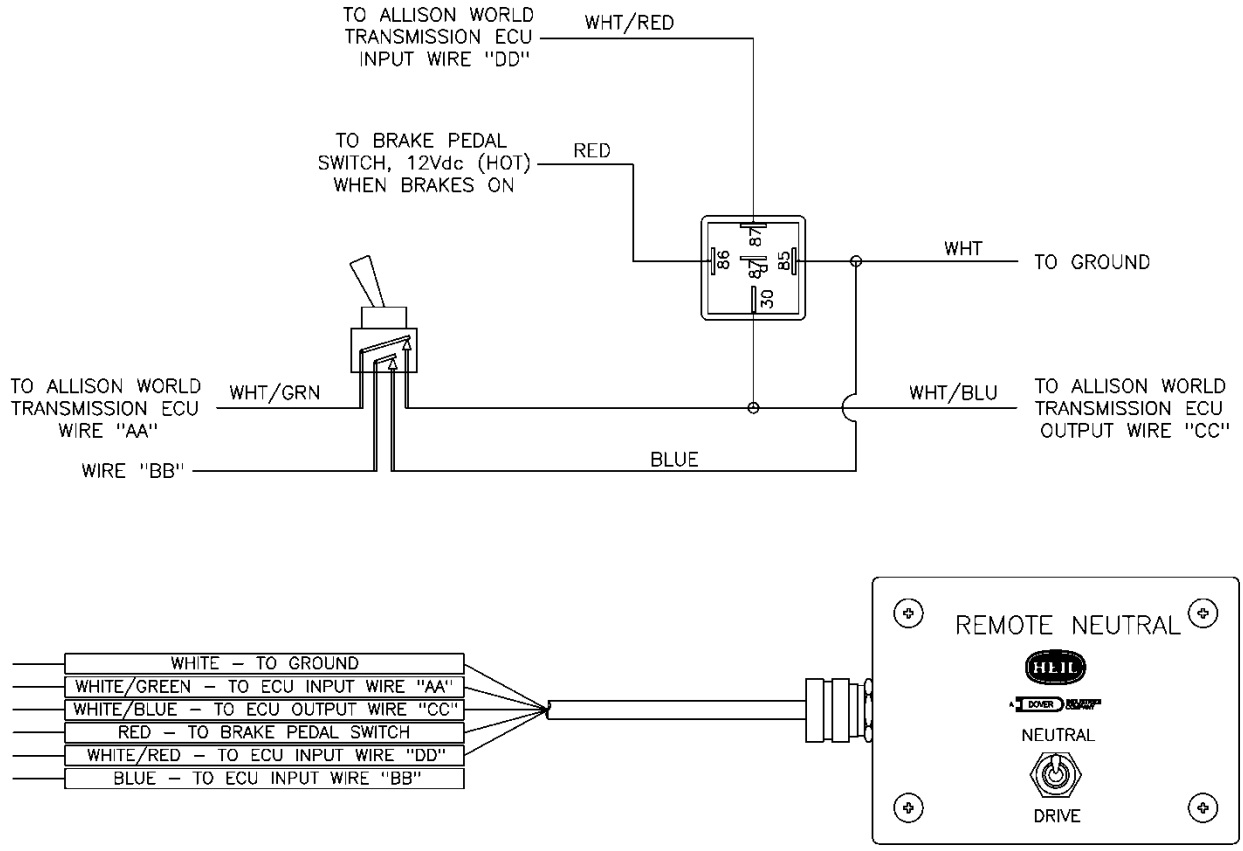
SCHEMATICS

CUMMINS ELECTRONIC THROTTLE LIMIT KIT - 272-8000-020, 272-8000-021



WIRE COLOR	FUNCTION
BROWN "801"	THROTTLE LIMIT
WHITE "GND"	GROUND
GREEN	CUMMINS MAX. ENGINE SPEED SWITCH

REMOTE NEUTRAL KIT - 272-8865

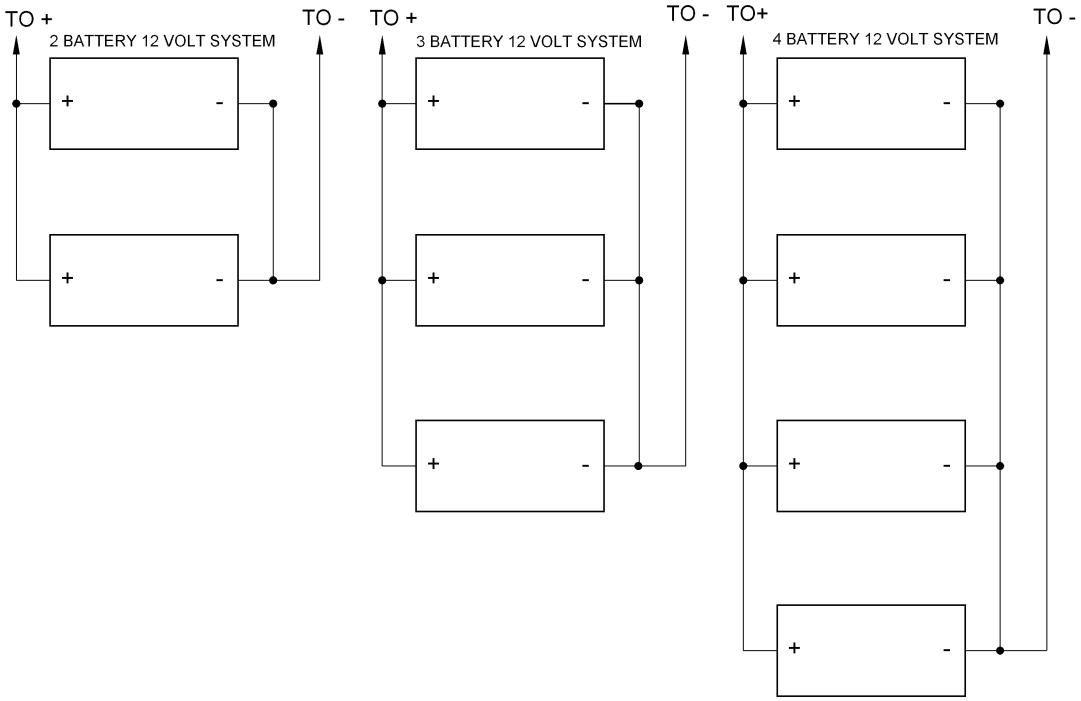


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ISSUED NOVEMBER 2011

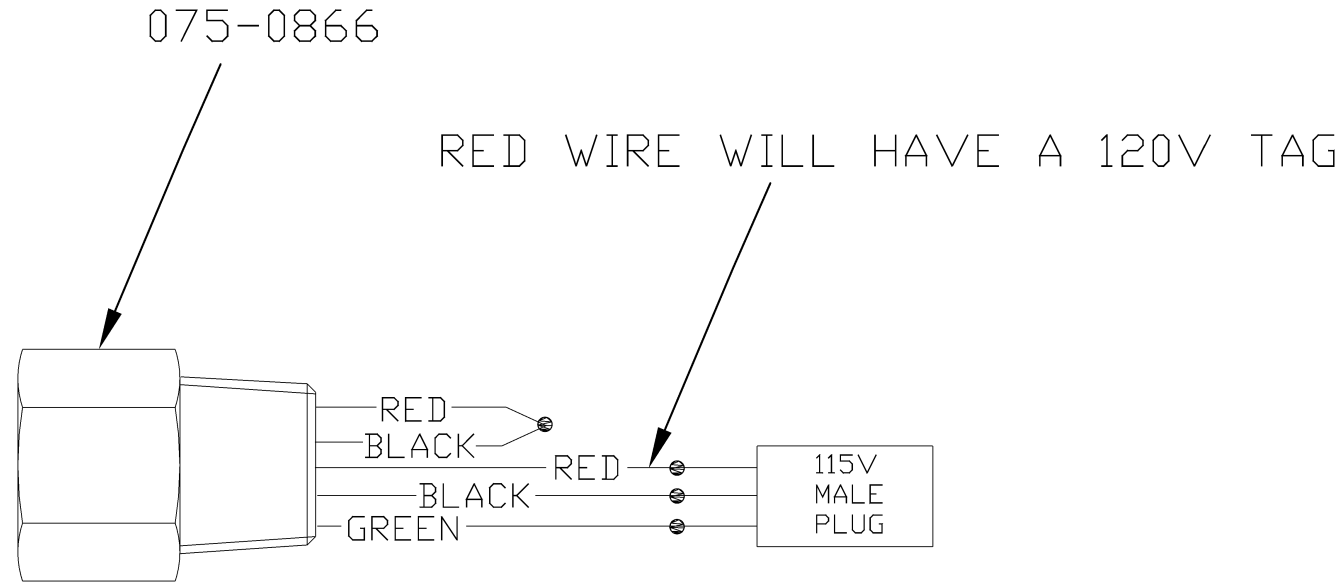
Rapid Rail® Co Collector

SCHEMATICS

BATTERY CONNECTIONS – 701-8038



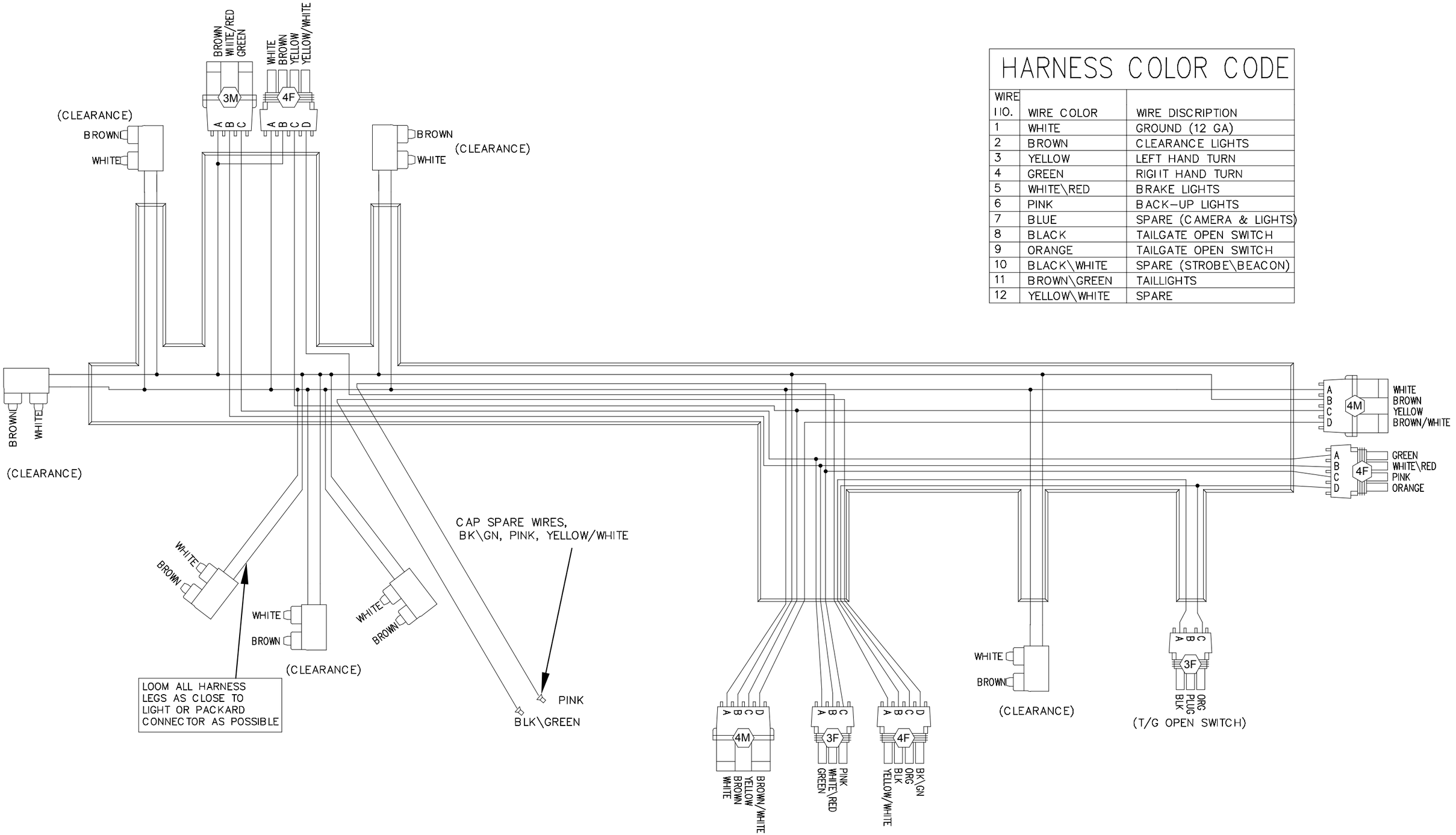
OIL HEATER ELEMENT SCHEMATIC – 701-8461



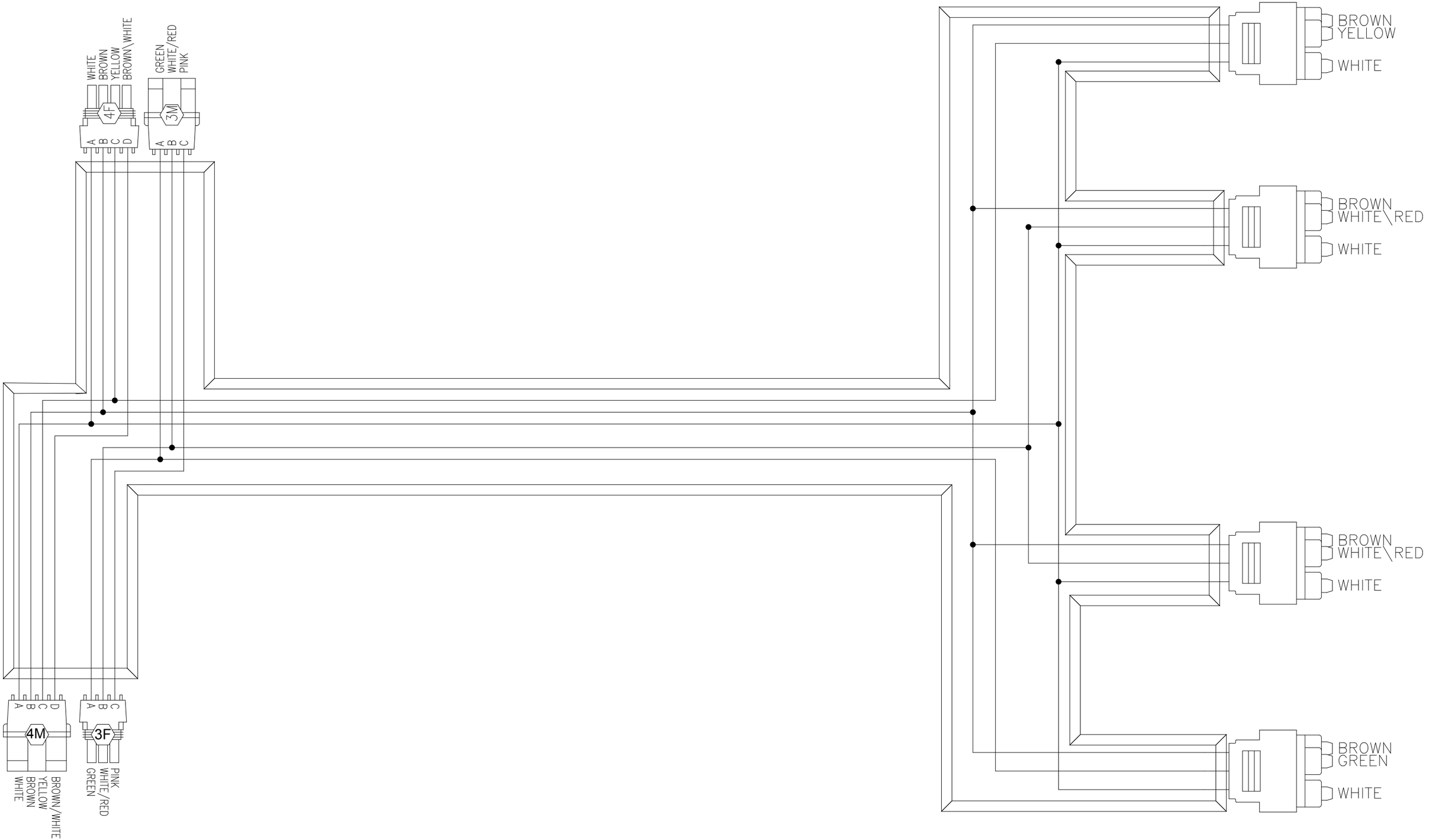
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HARNESS COLOR CODE

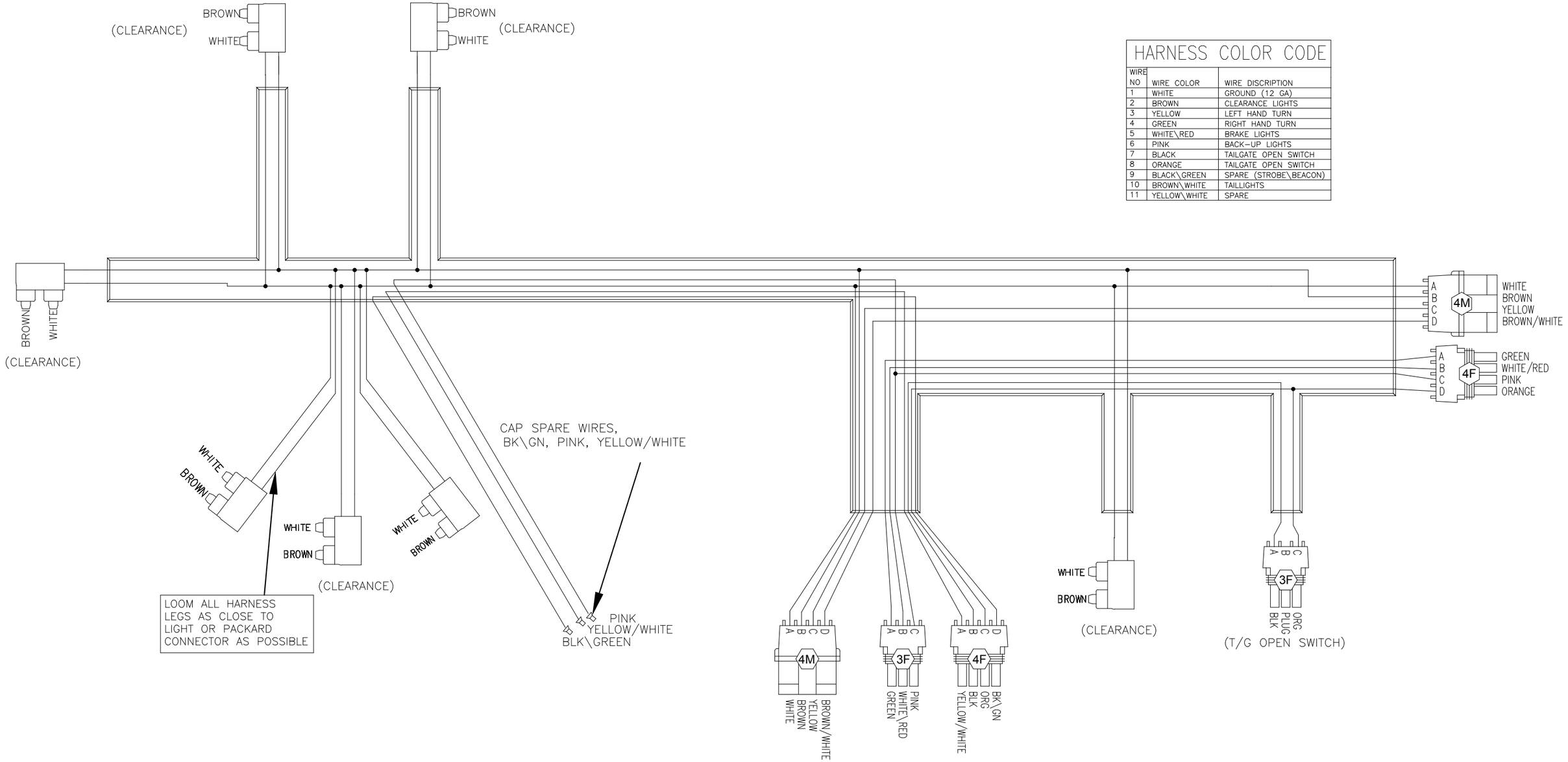
WIRE NO.	WIRE COLOR	WIRE DISCRIPTION
1	WHITE	GROUND (12 GA)
2	BROWN	CLEARANCE LIGHTS
3	YELLOW	LEFT HAND TURN
4	GREEN	RIGIT HAND TURN
5	WHITE\RED	BRAKE LIGHTS
6	PINK	BACK-UP LIGHTS
7	BLUE	SPARE (CAMERA & LIGHTS)
8	BLACK	TAILGATE OPEN SWITCH
9	ORANGE	TAILGATE OPEN SWITCH
10	BLACK\WHITE	SPARE (STROBE\BEACON)
11	BROWN\GREEN	TAILLIGHTS
12	YELLOW\WHITE	SPARE



TAILGATE HARNESS w/TAILGATE LIGHT BAR
108-5681
01/06/1998



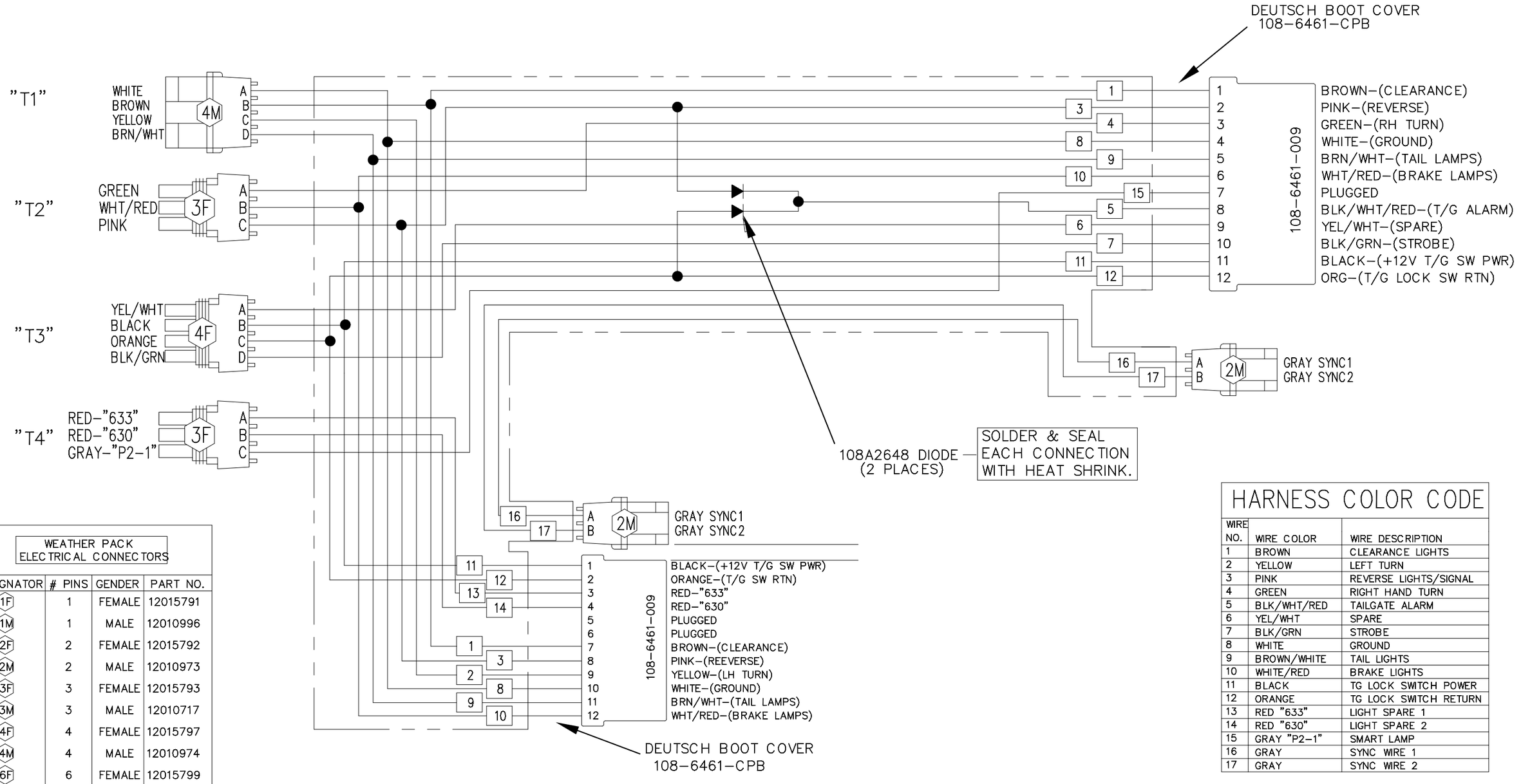
BRAKE LIGHT HARNESS
263-0092
05/29/1997



HARNESS COLOR CODE

WIRE NO	WIRE COLOR	WIRE DISCRIPTION
1	WHITE	GROUND (12 GA)
2	BROWN	CLEARANCE LIGHTS
3	YELLOW	LEFT HAND TURN
4	GREEN	RIGHT HAND TURN
5	WHITE\RED	BRAKE LIGHTS
6	PINK	BACK-UP LIGHTS
7	BLACK	TAILGATE OPEN SWITCH
8	ORANGE	TAILGATE OPEN SWITCH
9	BLACK\GREEN	SPARE (STROBE\BEACON)
10	BROWN\WHITE	TAILLIGHTS
11	YELLOW\WHITE	SPARE

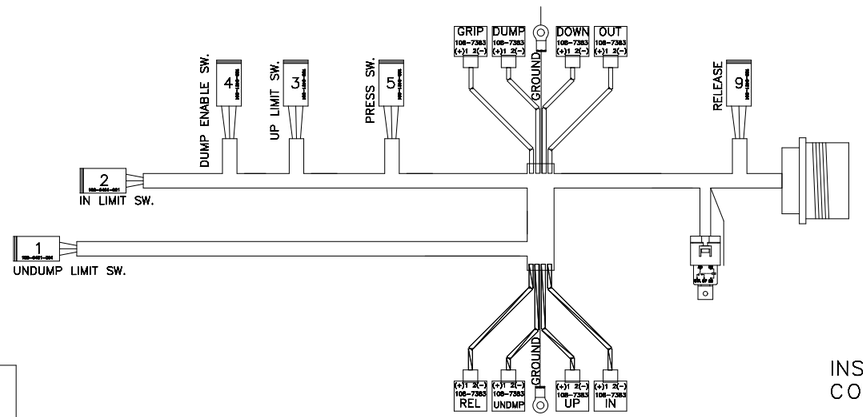
TAILGATE HARNESS
263-0279
05/06/1997



WEATHER PACK ELECTRICAL CONNECTORS			
DESIGNATOR	# PINS	GENDER	PART NO.
1F	1	FEMALE	12015791
1M	1	MALE	12010996
2F	2	FEMALE	12015792
2M	2	MALE	12010973
3F	3	FEMALE	12015793
3M	3	MALE	12010717
4F	4	FEMALE	12015797
4M	4	MALE	12010974
6F	6	FEMALE	12015799
6M	6	MALE	12010975

HARNESS COLOR CODE		
WIRE NO.	WIRE COLOR	WIRE DESCRIPTION
1	BROWN	CLEARANCE LIGHTS
2	YELLOW	LEFT TURN
3	PINK	REVERSE LIGHTS/SIGNAL
4	GREEN	RIGHT HAND TURN
5	BLK/WHT/RED	TAILGATE ALARM
6	YEL/WHT	SPARE
7	BLK/GRN	STROBE
8	WHITE	GROUND
9	BROWN/WHITE	TAIL LIGHTS
10	WHITE/RED	BRAKE LIGHTS
11	BLACK	TG LOCK SWITCH POWER
12	ORANGE	TG LOCK SWITCH RETURN
13	RED "633"	LIGHT SPARE 1
14	RED "630"	LIGHT SPARE 2
15	GRAY "P2–1"	SMART LAMP
16	GRAY	SYNC WIRE 1
17	GRAY	SYNC WIRE 2

SPLITTER HARNESS
263-0664-002
09/19/2003



HARNESS COLOR CODE		
#	WIRE COLOR	DESCRIPTION
A	RED/WHITE	UNDUMP SWITCH
B	GREEN/BLACK	IN SWITCH
C	WHITE/RED	UP SWITCH
D	BLUE/BLACK	COORDINATOR DUMP
E	WHITE/BLUE	GRIP SWITCH
F	BLACK/RED	RELEASE SWITCH
G	RED/BLACK	DUMP SWITCH
H	WHITE/BLACK	DOWN SWITCH
J	GREEN	OUT SWITCH
K	GREEN/YELLOW	LOADER OUT SIGNAL (PLC)
L	WHITE	GROUND
M	PURPLE	LOADER SPARE

INSTALL IN DEUTSCH PLUG
CONNECTIONS AS LABELED

NOTE:
JUMPER PLUG
108-6823-002
TO BE INCLUDED W/HARNESS

WIRING FOR MICROSWITCH 108-7381
N/O CONTACTS = 1(BLACK), 5 (WHITE).
N/C CONTACTS = 3 (ORANGE), 4 (RED).

GO SWITCHES
POSITION A = BLACK,
POSITION B = BLUE,
POSITION C = RED.

RELEASE N/O SW 9 — BLACK/RED, BLACK
UNDUMP N/C SW 1 — RED/WHITE, ORANGE
IN N/C SW 2 — GREEN/BLACK, GREEN/YELLOW, BLACK/GREEN
UP N/C SW 3 — WHITE/RED, RED
DUMP N/O SW 4 — BLUE/BLACK, RED/BLK

RED/WHITE — A – LOADER "UNDUMP"
GREEN/BLACK — B – LOADER "IN"
WHITE/RED — C – LOADER "UP"
BLUE/BLACK — D – COORD "DUMP"
WHITE/BLUE — E – LOADER "GRIP"
BLACK/RED — F – LOADER "RELEASE"
RED/BLK — G – LOADER "DUMP"
WHT/BLK — H – LOADER "DOWN"
GREEN — J – LOADER "OUT"
GREEN/YELLOW — K – +12V LOADER OUT SIG
WHITE — L – GROUND
PURPLE — M – LOADER SPARE

*ADD PLUGS TO OPEN CONNECTIONS OF CONNECTORS

DEUTSCH CONNECTOR, PLUG
3-WAY DT06-3S-P012
HIEL PART# 108-6461-001
(6 PLCS)

WHT/BLU
BLUE

PRESSURE SWITCH 5 (A B C)
COMMON
N.O.
N.C.
BLACK
RED
BLUE
PRESSURE SWITCH

#10 RING
DIN — RELEASE, UNDUMP, UP, IN
DIN — GRIP, DUMP, DOWN, OUT
#10 RING

LOADER
FOUR STACK VALVE

NOTE:
DIN CONNECTORS MUST INCLUDE
LED'S AND SURGE PROTECTION
FOR 45 WATT 12V DC COILS

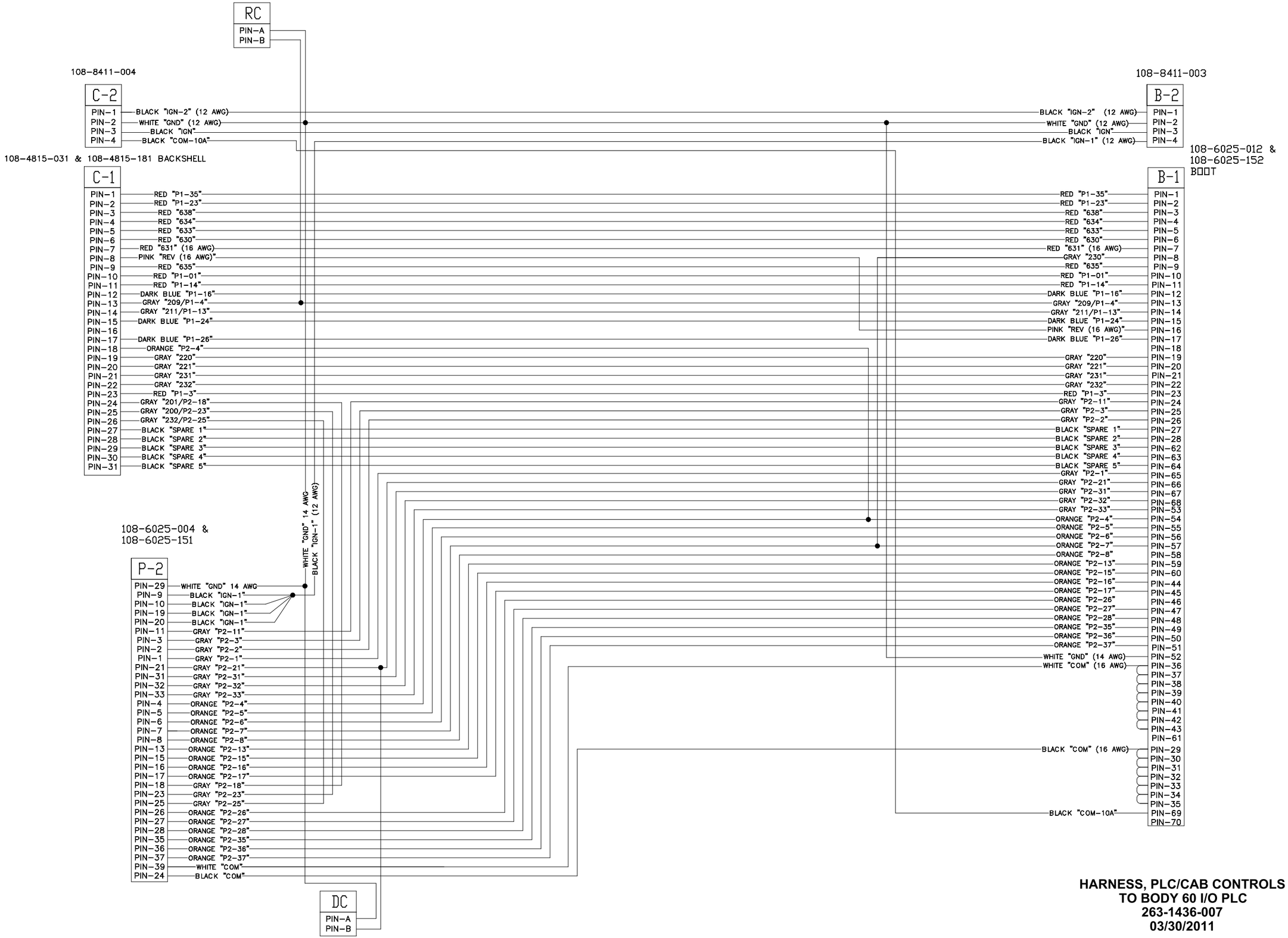
DIN CONNECTOR
108-7383

30
87
87A
85
86
108-6752

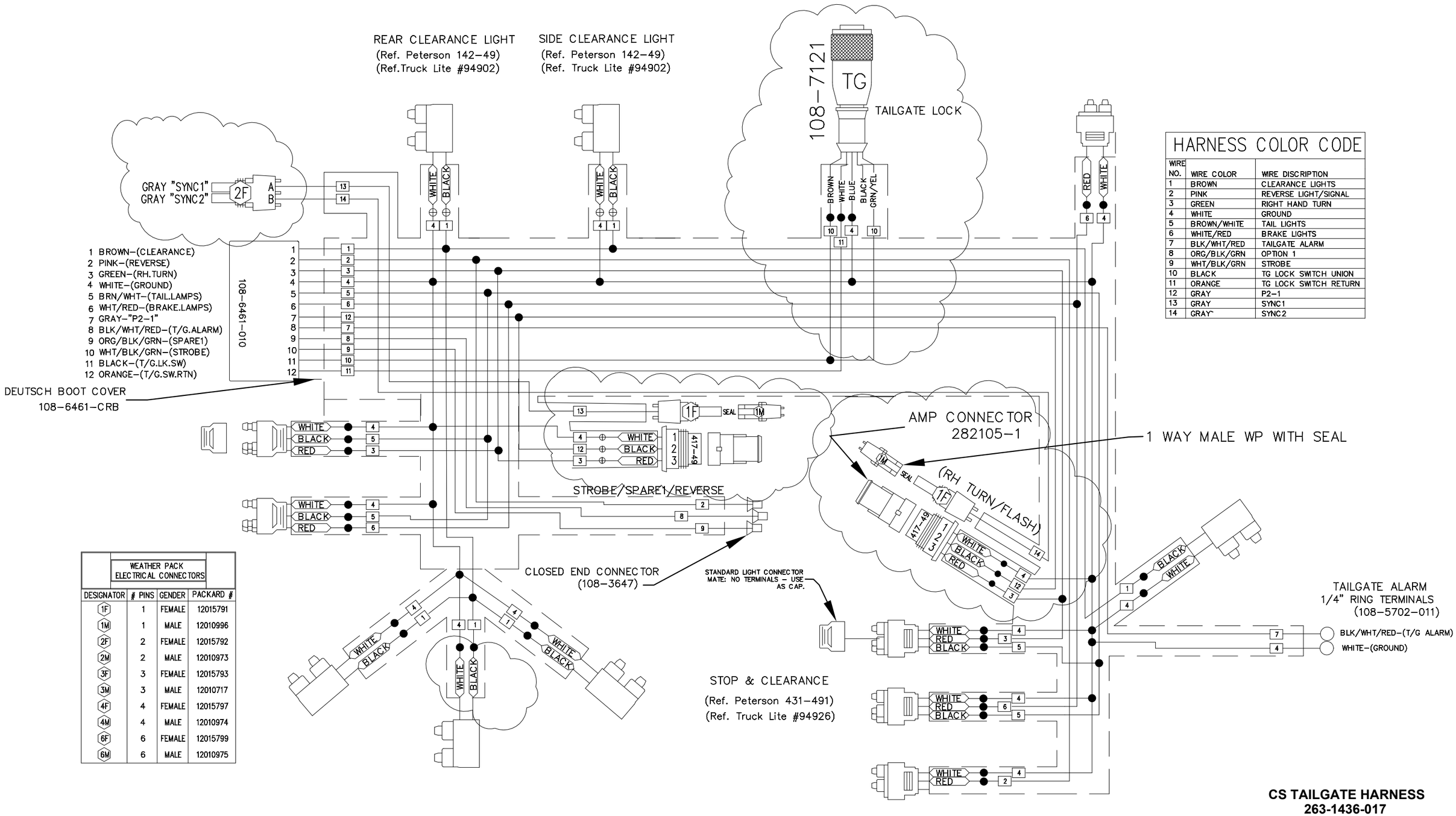
USE 12 OF DEUTSCH
0460-202-16141 PIN

LABEL W/PART #
AT EACH END

LOADER HARNESS-VALVE END
263-1213
12/16/2003



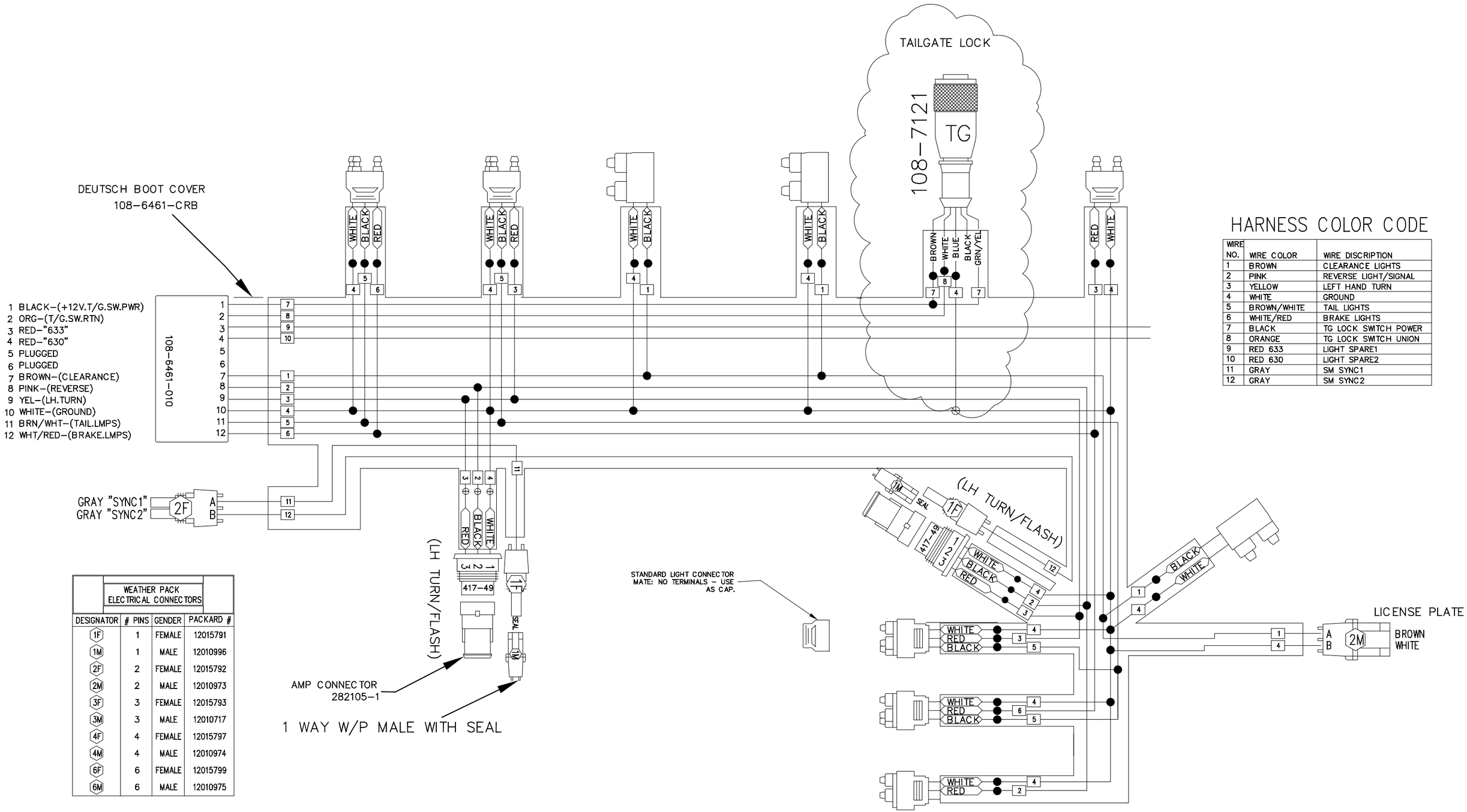
HARNESS, PLC/CAB CONTROLS
TO BODY 60 I/O PLC
263-1436-007
03/30/2011



HARNESS COLOR CODE		
WIRE NO.	WIRE COLOR	WIRE DISCRIPTION
1	BROWN	CLEARANCE LIGHTS
2	PINK	REVERSE LIGHT/SIGNAL
3	GREEN	RIGHT HAND TURN
4	WHITE	GROUND
5	BROWN/WHITE	TAIL LIGHTS
6	WHITE/RED	BRAKE LIGHTS
7	BLK/WHT/RED	TAILGATE ALARM
8	ORG/BLK/GRN	OPTION 1
9	WHT/BLK/GRN	STROBE
10	BLACK	TG LOCK SWITCH UNION
11	ORANGE	TG LOCK SWITCH RETURN
12	GRAY	P2-1
13	GRAY	SYNC1
14	GRAY	SYNC2

WEATHER PACK ELECTRICAL CONNECTORS			
DESIGNATOR	# PINS	GENDER	PACKARD #
1F	1	FEMALE	12015791
1M	1	MALE	12010996
2F	2	FEMALE	12015792
2M	2	MALE	12010973
3F	3	FEMALE	12015793
3M	3	MALE	12010717
4F	4	FEMALE	12015797
4M	4	MALE	12010974
6F	6	FEMALE	12015799
6M	6	MALE	12010975

CS TAILGATE HARNESS
263-1436-017
04/30/2008

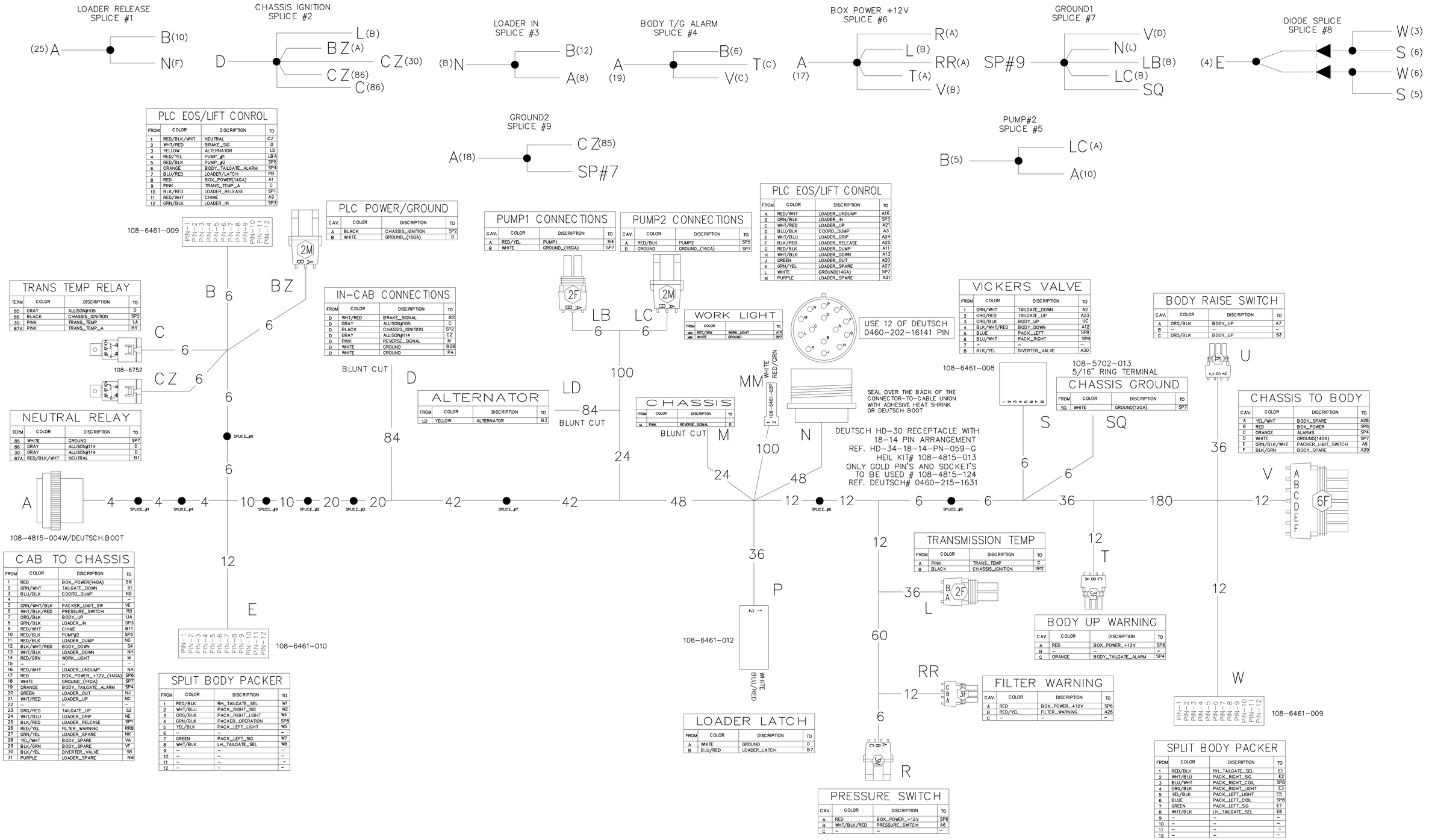


HARNESS COLOR CODE

WIRE NO.	WIRE COLOR	WIRE DISCRIPTION
1	BROWN	CLEARANCE LIGHTS
2	PINK	REVERSE LIGHT/SIGNAL
3	YELLOW	LEFT HAND TURN
4	WHITE	GROUND
5	BROWN/WHITE	TAIL LIGHTS
6	WHITE/RED	BRAKE LIGHTS
7	BLACK	TG LOCK SWITCH POWER
8	ORANGE	TG LOCK SWITCH UNION
9	RED 633	LIGHT SPARE1
10	RED 630	LIGHT SPARE2
11	GRAY	SM SYNC1
12	GRAY	SM SYNC2

WEATHER PACK ELECTRICAL CONNECTORS			
DESIGNATOR	# PINS	GENDER	PACKARD #
1F	1	FEMALE	12015791
1M	1	MALE	12010996
2F	2	FEMALE	12015792
2M	2	MALE	12010973
3F	3	FEMALE	12015793
3M	3	MALE	12010717
4F	4	FEMALE	12015797
4M	4	MALE	12010974
6F	6	FEMALE	12015799
6M	6	MALE	12010975

SS TAILGATE HARNESS
263-1436-018
04/30/2008



CHASSIS HARNESS
263-1039-003
02/01/2005

NOTE: LOCATE DIODES WITHIN 12" OF CONNECTOR.

LOADER IN PROX

LI
PIN-1 WHITE "COM" (16 AWG)
PIN-2 ORANGE "P2-37"
PIN-3 BLACK "COM" (16 AWG)

CONTROL BOX

LDD
PIN-1 GRAY "211/P1-13"
PIN-2 BLACK "GND" (14 AWG)
PIN-3 GRAY "P2-2"
PIN-4 GRAY "P2-21"
PIN-5 WHITE "GND" (14 AWG)
PIN-6 GRAY "P2-32"
PIN-7 GRAY "P2-33"
PIN-8 ORANGE "P2-4"
PIN-9 GRAY "209/P1-4"
PIN-10 GRAY "P2-11"
PIN-11 GRAY "P2-31"
PIN-12 DK. BLUE "513"
PIN-13 DK. BLUE "515"
PIN-14 DK. BLUE "510"
PIN-15 DK. BLUE "516"
PIN-16 DK BLUE "517"
PIN-17 DL. BLUE "517"
PIN-18 DK. BLUE "512"
PIN-19 DK. BLUE "511"
PIN-20 DK. BLUE "514"
PIN-21 GRAY "P2-3"
PIN-22 WHITE "RET 6/7"
PIN-23 WHITE "RET 4/5"
PIN-24 WHITE "RET 2/3"
PIN-25 WHITE "RET 0/1"
PIN-26 N/C
PIN-27 N/C
PIN-28 N/C
PIN-29 N/C
PIN-30 N/C
PIN-31 N/C

LOADER CONNECTOR

LIN
PIN-1 WHITE
PIN-2 BROWN
PIN-3 GREEN
PIN-4 YELLOW
PIN-5 GRAY
PIN-6 PINK
PIN-7 BLUE
PIN-8 RED

ORANGE "P2-27"
ORANGE "P2-28"
ORANGE "P2-6"
ORANGE "P2-13"
ORANGE "P2-35"
BLACK "+12V"
WHITE "GND"
N/C

TACH

LD
DARK BLUE "P1-24"

PUMP #2 PUMP #1

LB
PIN-A RED "P1-35"
PIN-B WHITE "GND (14 AWG)

LC
PIN-A RED "P1-23"
PIN-B WHITE "GND" (14 AWG)

LOW TORQUE BODY VALVES

LT
PIN-1 ORANGE "P2-16"
PIN-2 DARK BLUE "P1-16"

S
PIN-1 GRAY "232"
PIN-2 GRAY "231"
PIN-3 GRAY "220"
PIN-4 GRAY "221"
PIN-5 RED "P1-14"
PIN-6 RED "P1-01"
PIN-7 WHITE "GND" (14 AWG)
PIN-8 GRAY "231"

SQ
WHITE "GND" (14 AWG)

BODY UP PROX

BU
PIN-A BROWN
PIN-B WHITE
PIN-C BLUE
PIN-D
PIN-E GN/YW

ORANGE "P2-7"

BODY UP LSW

U
PIN-1 GRAY "220"
PIN-2
PIN-3 GRAY "220"

GRAY "220"
GRAY "220"

B-2
PIN-1 BLACK "IGN-2" (12 AWG)
PIN-2 WHITE "GND" (12 AWG)
PIN-3 BLACK "IGN"
PIN-4 BLACK "IGN-1" (12 AWG)

B-1
PIN-1 RED "P1-35"
PIN-2 RED "P1-23"
PIN-3 RED "638"
PIN-4 RED "634"
PIN-5 RED "633"
PIN-6 RED "630"
PIN-7 RED "631" (16 AWG)
PIN-8 GRAY "230"
PIN-9 RED "635"
PIN-10 RED "P1-01"
PIN-11 RED "P1-14"
PIN-12 DARK BLUE "P1-16"
PIN-13 GRAY "209/P1-4"
PIN-14 GRAY "211/P1-13"
PIN-15 DARK BLUE "P1-24"
PIN-16 PINK "REV (14 AWG)"
PIN-17 DARK BLUE "P1-26"
PIN-18
PIN-19 GRAY "220"
PIN-20 GRAY "221"
PIN-21 GRAY "231"
PIN-22 GRAY "232"
PIN-23
PIN-24 GRAY "P2-11"
PIN-25 GRAY "P2-3"
PIN-26 GRAY "P2-2"
PIN-27
PIN-28 RED "PL-PROX"
PIN-62 RED "PR-PROX"
PIN-63 RED "RH-TG"
PIN-64 RED "LH-TG"
PIN-65 GRAY "P2-1"
PIN-66 GRAY "P2-21"
PIN-67 GRAY "P2-31"
PIN-68 GRAY "P2-32"
PIN-53 GRAY "P2-33"
PIN-54 ORANGE "P2-4"
PIN-55 ORANGE "P2-5"
PIN-56 ORANGE "P2-6"
PIN-57 ORANGE "P2-7"
PIN-58 ORANGE "P2-8"
PIN-59 ORANGE "P2-13"
PIN-60
PIN-44 ORANGE "P2-16"
PIN-45
PIN-46 ORANGE "P2-26"
PIN-47 ORANGE "P2-27"
PIN-48 ORANGE "P2-28"
PIN-49 ORANGE "P2-35"
PIN-50
PIN-51 ORANGE "P2-37"
PIN-52 WHITE "GND" (14 AWG)
PIN-36 WHITE "COM" (18 AWG)
PIN-37 WHITE "COM" (16 AWG)
PIN-38 WHITE "COM" (16 AWG)
PIN-39 WHITE "COM" (16 AWG)
PIN-40 WHITE "COM" (16 AWG)
PIN-41
PIN-42
PIN-43
PIN-61
PIN-29 BLACK "COM" (18 AWG)
PIN-30 BLACK "COM" (16 AWG)
PIN-31 BLACK "COM" (16 AWG)
PIN-32 BLACK "COM" (16 AWG)
PIN-33 BLACK "COM" (16 AWG)
PIN-34 BLACK "COM" (16 AWG)
PIN-35 BLACK "COM" (16 AWG)
PIN-69
PIN-70

B-3
PIN-1 PINK "REV"
PIN-2 RED "STOP"
PIN-3 GREEN "R.TURN"
PIN-4 YELLOW "L.TURN"
PIN-5 BLACK "CLEAR"
PIN-6 BROWN "TAIL"
PIN-7 ORANGE "P2-5"
PIN-8 BLACK "COM" (16 AWG)

B-4
PIN-1 RED "638"
PIN-2 RED "634"
PIN-3 RED "633"
PIN-4 RED "630"
PIN-5 GRAY "P2-1"
PIN-6 BLACK "COM" (16 AWG)
PIN-7 WHITE "GND"
PIN-8 GRAY "230"

RED "PL-PROX"
RED "PR-PROX"
RED "RH-TG"
RED "LH-TG"
GRAY "P2-1"

WHITE "COM" (16 AWG)
BLACK "COM" (16 AWG)

WHITE "GND"
PINK "REV" (14 AWG)
BROWN "TAIL" (14 AWG)
BLACK "CLEAR" (14 AWG)
RED "STOP" (14 AWG)
YELLOW "L.TURN" (14 AWG)
GREEN "R.TURN" (14 AWG)
BLACK "COM" (16 AWG)

RED "RH-TG"
RED "LH-TG"
RED "PR-PROX"
RED "PL-PROX"

PINK "REV" (14 AWG)
BROWN "TAIL" (14 AWG)
BLACK "CLEAR" (14 AWG)
RED "STOP" (14 AWG)
YELLOW "L.TURN" (14 AWG)
GREEN "R.TURN" (14 AWG)

PINK "REV" (14 AWG)
BLACK "COM" (16 AWG)

BLACK "COM" (16 AWG)

BROWN "TAIL" (14 AWG)
BLACK "CLEAR" (14 AWG)
RED "STOP" (14 AWG)
YELLOW "L.TURN" (14 AWG)
GREEN "R.TURN" (14 AWG)

PINK "REV" (14 AWG)
BROWN "TAIL" (14 AWG)
BLACK "CLEAR" (14 AWG)
RED "STOP" (14 AWG)
YELLOW "L.TURN" (14 AWG)
GREEN "R.TURN" (14 AWG)

VLV
PIN-1 DK. BLUE "513"
PIN-2 DK. BLUE "515"
PIN-3 DK. BLUE "510"
PIN-4 DK. BLUE "516"
PIN-5 DL. BLUE "517"
PIN-6 DK. BLUE "512"
PIN-7 DK. BLUE "511"
PIN-8 DK. BLUE "514"
PIN-9 WHITE "RET 6/7"
PIN-10 WHITE "RET 4/5"
PIN-11 WHITE "RET 2/3"
PIN-12 WHITE "RET 0/1"

A2

M
PIN-1 RED "631" (16 AWG)
PIN-2 WHITE "GND" (16 AWG)
PIN-3 RED "635"
PIN-4 WHITE "GND" (16 AWG)

OPTION LIGHTS

A1
BLACK "IGN-2" (12 AWG)
WHITE "GND" (12 AWG)
BLACK "IGN"
BLACK "IGN-1" (12 AWG)

IGNITION

R
PIN-A ORANGE "P2-8"
PIN-B DARK BLUE "P1-16"
PIN-C

RR
PIN-A ORANGE "P2-26"
PIN-B DARK BLUE "P1-16"
PIN-C

L
PIN-A DARK BLUE "P1-26"
PIN-B DARK BLUE "P1-16"

PACKER PSW
FILTER PSW

TRANS TEMP

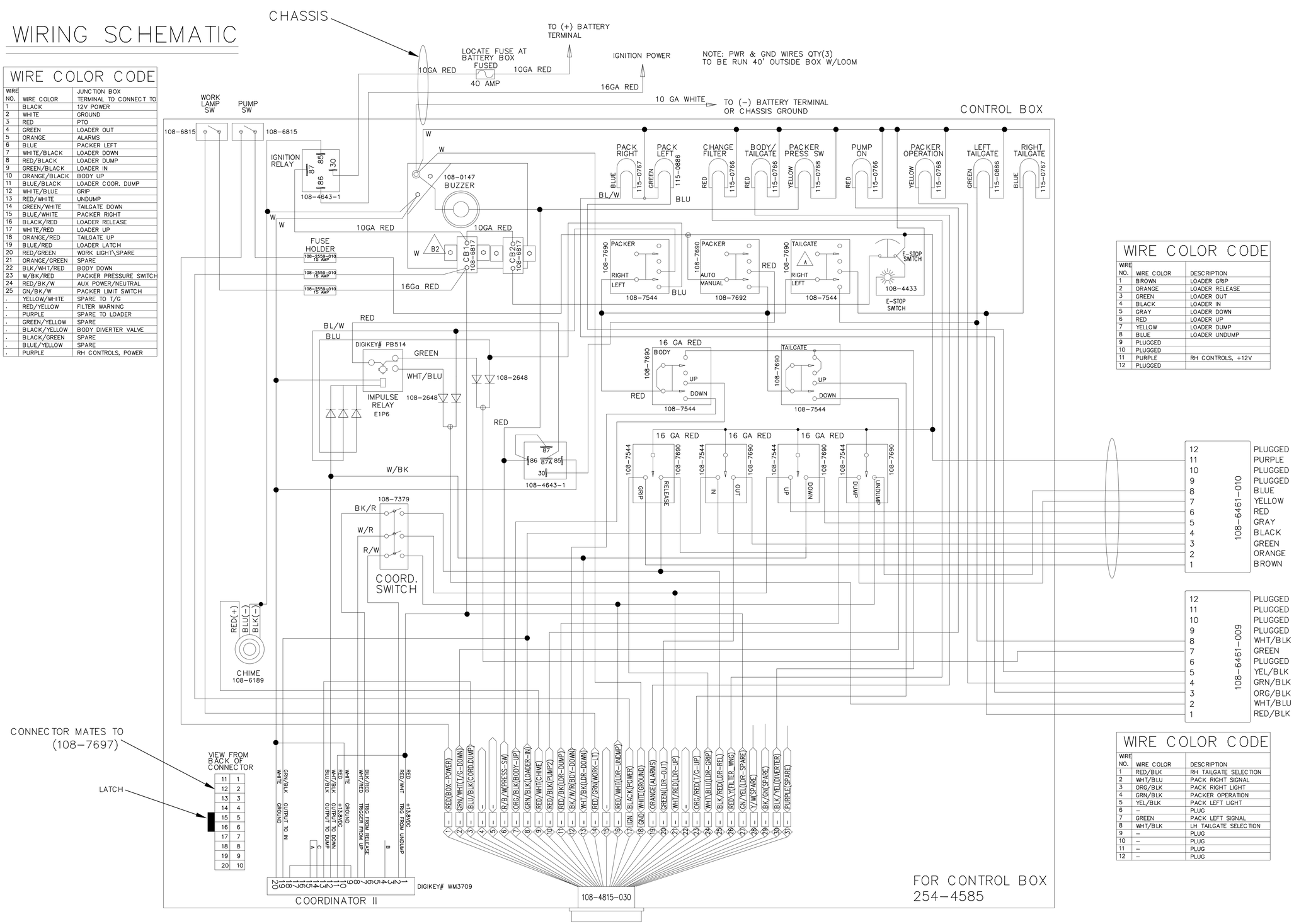
CCOL
PIN-1 RED "RH-TG"
PIN-2 RED "LH-TG"
PIN-3 RED "PR-PROX"
PIN-4 RED "PL-PROX"
PIN-5
PIN-6 WHITE "GND"

CHASSIS HARNESS
263-1436-002
09/02/2009

WIRING SCHEMATIC

WIRE COLOR CODE

WIRE NO.	WIRE COLOR	JUNCTION BOX TERMINAL TO CONNECT TO
1	BLACK	12V POWER
2	WHITE	GROUND
3	RED	PTO
4	GREEN	LOADER OUT
5	ORANGE	ALARMS
6	BLUE	PACKER LEFT
7	WHITE/BLACK	LOADER DOWN
8	RED/BLACK	LOADER DUMP
9	GREEN/BLACK	LOADER IN
10	ORANGE/BLACK	BODY UP
11	BLUE/BLACK	LOADER COOR. DUMP
12	WHITE/BLUE	GRIP
13	RED/WHITE	UNDUMP
14	GREEN/WHITE	TAILGATE DOWN
15	BLUE/WHITE	PACKER RIGHT
16	BLACK/RED	LOADER RELEASE
17	WHITE/RED	LOADER UP
18	ORANGE/RED	TAILGATE UP
19	BLUE/RED	LOADER LATCH
20	RED/GREEN	WORK LIGHT\SPARE
21	ORANGE/GREEN	SPARE
22	BLK/WHT/RED	BODY DOWN
23	W/BK/RED	PACKER PRESSURE SWITCH
24	RED/BK/W	AUX POWER/NEUTRAL
25	GN/BK/W	PACKER LIMIT SWITCH
.	YELLOW/WHITE	SPARE TO T/G
.	RED/YELLOW	FILTER WARNING
.	PURPLE	SPARE TO LOADER
.	GREEN/YELLOW	SPARE
.	BLACK/YELLOW	BODY DIVERTER VALVE
.	BLACK/GREEN	SPARE
.	BLUE/YELLOW	SPARE
.	PURPLE	RH CONTROLS, POWER



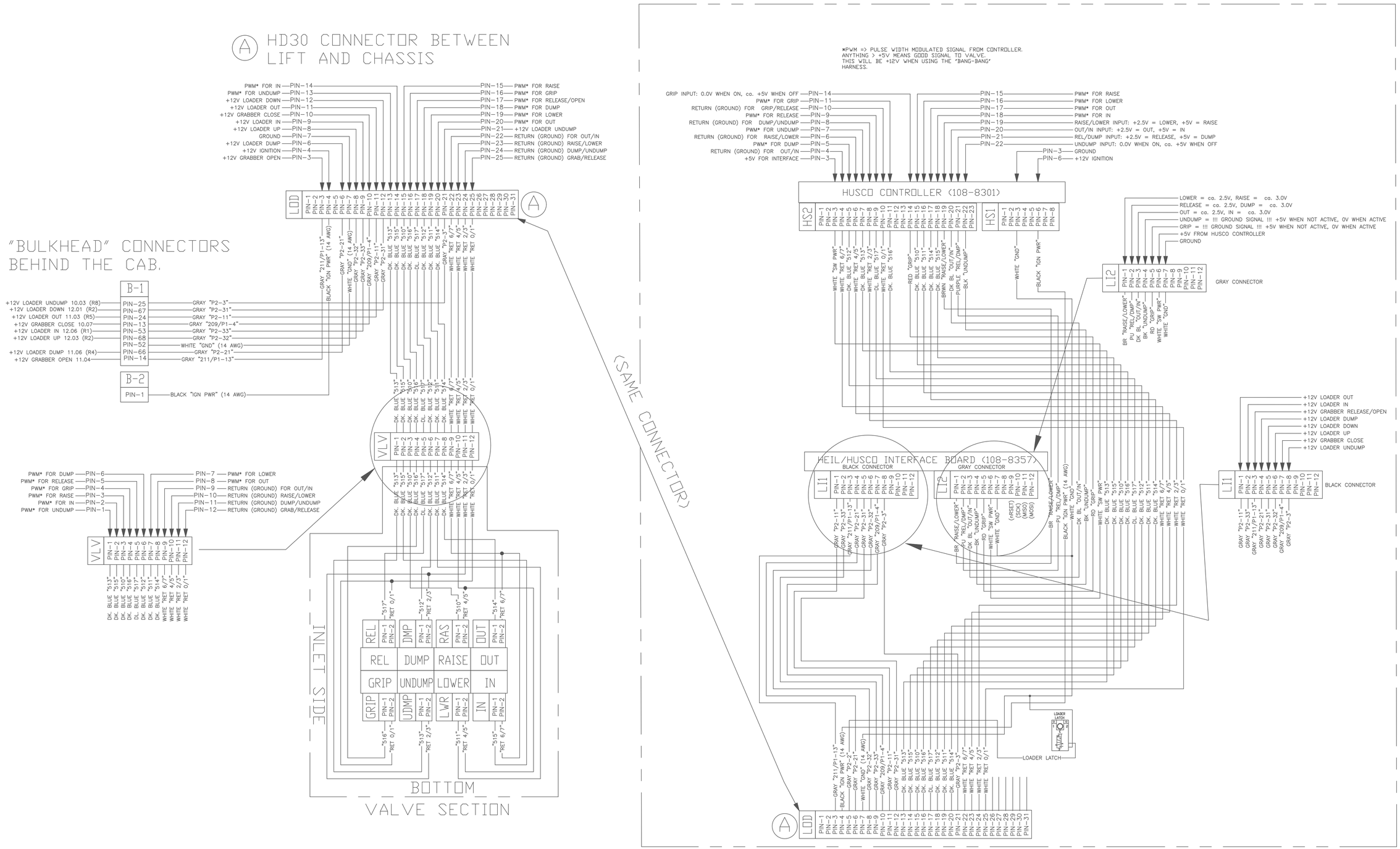
WIRE COLOR CODE

WIRE NO.	WIRE COLOR	DESCRIPTION
1	BROWN	LOADER GRIP
2	ORANGE	LOADER RELEASE
3	GREEN	LOADER OUT
4	BLACK	LOADER IN
5	GRAY	LOADER DOWN
6	RED	LOADER UP
7	YELLOW	LOADER DUMP
8	BLUE	LOADER UNDUMP
9	PLUGGED	
10	PLUGGED	
11	PURPLE	RH CONTROLS, +12V
12	PLUGGED	

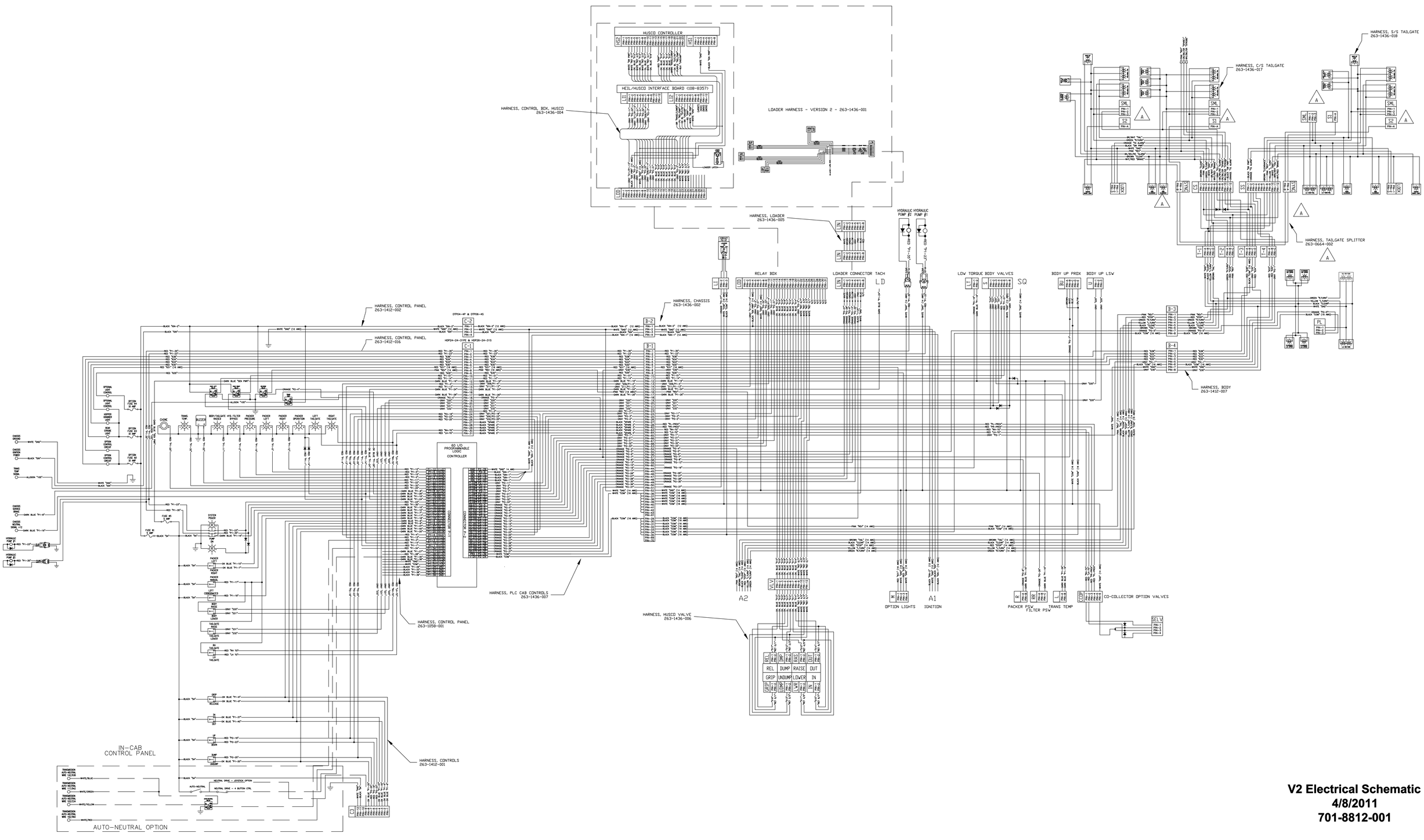
WIRE COLOR CODE

WIRE NO.	WIRE COLOR	DESCRIPTION
1	RED/BLK	RH TAILGATE SELECTION
2	WHT/BLU	PACK RIGHT SIGNAL
3	ORG/BLK	PACK RIGHT LIGHT
4	GRN/BLK	PACKER OPERATION
5	YEL/BLK	PACK LEFT LIGHT
6	–	PLUG
7	GREEN	PACK LEFT SIGNAL
8	WHT/BLK	LH TAILGATE SELECTION
9	–	PLUG
10	–	PLUG
11	–	PLUG
12	–	PLUG

CONTROL BOX SCHEMATIC
701-8431-002
11/23/2004



LIFT ELECTRICAL TROUBLESHOOTING GUIDE
701-8903
01/13/10



V2 Electrical Schematic
4/8/2011
701-8812-001

HEIL ENVIRONMENTAL WARRANTY STATEMENT

The Heil Co. d/b/a Heil Environmental ("Heil") warrants its solid waste collection equipment to be free from defects in material and workmanship under normal single-shift use for a period of six (6) months or 1250 hours of operation (whichever comes first) from the date of equipment In-Service or during the period of coverage offered by an extended warranty program, when operated in accordance with its *Operator's Manual* and proper service and maintenance as described in Heil *Service Bulletins* and *Parts & Service Manuals* are performed. The standard or extended equipment warranty is not transferable except for sales demonstration units.

This warranty is expressly limited to the repair or replacement of any component or part thereof, of any such refuse or recycling collection body manufactured by Heil that is proven to Heil's satisfaction to have been defective in material or workmanship. Such components or parts shall be repaired or replaced at Heil's option without cost to the standard purchaser for parts and labor provided such unit is returned to an authorized Heil Dealer for replacement or repair. The repair or replacement must be made during the standard or extended warranty coverage period.

Before any warranty can be allowed on new equipment, a validated warranty registration form must be on file with Heil's Customer Service Department within sixty (60) days of the equipment's In-Service date. Wear items are excluded from warranty coverage.

All OEM service parts sold by Heil have a six (6) month warranty from the date of purchase. Aftermarket parts purchased from Heil are supported by a 90-day warranty. The parts warranty covers parts only, providing that factory inspection reveals a defect in material or workmanship. Labor, troubleshooting, equipment downtime, etc. is not covered under the parts warranty policy.

HEIL MAKES NO OTHER WARRANTY, EXPRESSED OR IMPLIED, AND MAKES NO WARRANTY OF MERCHANTABILITY OR OF FITNESS FOR ANY PARTICULAR PURPOSE. HEIL DOES NOT ASSUME ANY LIABILITY OR ACCEPT CLAIMS FOR LOSS OF PROFITS, PRODUCT DOWN TIME OR ANY OTHER DIRECT, INCIDENTAL OR INDIRECT CONSEQUENTIAL LOSSES, COSTS, DAMAGES OR DELAYS.

Any improper use, operation beyond rated equipment or component capacity, substitution of parts that are not Heil-approved, or any alteration or repair by others in such a manner as in Heil's sole judgment affect the product operation or integrity shall void the warranty.

Other than the extension of the standard warranty period purchased under a supplemental *Heil Extended Warranty Program*, no employee or representative is authorized to modify this warranty in any way nor shall any other warranties be granted. No dealer-supplied warranty program is endorsed or supported by Heil.

Heil retains the right to modify its factory warranty program prospectively at any time.